

# **REMEDIAL ACTION REPORT**

**for**

**AOC-24: Woodbridge Pond**

**HATCO CORPORATION SITE**

**FORDS, NEW JERSEY**

**November 2020**

Prepared for:

**U.S. Environmental Protection Agency, Region 2**

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## ACRONYMS AND ABBREVIATIONS

ACE	ACE American Insurance Company, now Chubb Insurance
AMOC	Air Monitoring and Odor Control Plan
AOC	Area of Concern
ARRCS	Administrative Requirements for the Remediation of Contaminated Sites
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
BEHP	bis(2-ethylhexyl)phthalate (Also Diethylhexyl phthalate [DEHP])
CFR	Code of Federal Regulations
CY	cubic yard
DGA	dense graded aggregate
DUA	Data Usability Assessment
EDR	Environmental Data Resources Inc.
EPH	Extractable Petroleum Hydrocarbon
FHA	Flood Hazard Area
FSCD	Freehold Soil Conservation District
FWGP4	Freshwater Wetlands General Permit 4
GIS	Geographic Information System
GPS	Global Positioning System
HASP	Health and Safety Plan
Hatco	Hatco Corporation
ID	Identification
IDW	Investigative-Derived Waste
IGW	Impact to Groundwater
IGWSSLs	Impact to Groundwater Soil Screening Levels
IRM	Interim Remedial Measures





## **ACRONYMS AND ABBREVIATIONS (CONTINUED)**

KSS	Kennon Surveying Services
LANXESS	LANXESS Solutions US Inc.
LCS/LCSD	Laboratory Control Sample / Laboratory Control Sample Duplicate
LNAPL	Light Non-Aqueous Phase Liquid
LSRP	Licensed Site Remediation Professional
MDL	method detection limit
mg/kg	milligram per kilogram
mg/m <sup>3</sup>	milligrams per cubic meter
MS/MSD	matrix spike/matrix spike duplicate
msl	mean sea level
NAVD88	North American Vertical Datum of 1988
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NJPDES	New Jersey Pollution Discharge Elimination System
NTU	Nephelometric turbidity unit
PAH	Polycyclic Aromatic Hydrocarbons
PAMT	Perimeter Air Monitoring Technician
PCB	polychlorinated biphenyls
PID	photoionization detector
PPE	Personal Protective Equipment
ppmv	parts per million volume
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QC	Quality control
RAO	Response Action Outcome
RAPR	Remedial Action Progress Report





## **ACRONYMS AND ABBREVIATIONS (CONTINUED)**

RAR	Remedial Action Report
RAWP	Remedial Action Workplan
RAWPA4	Consolidated RAWP Addendum 4
RE	Receptor Evaluation
RI	Remedial Investigation
RIR	Remedial Investigation Report
RL	reporting limit
RPD	relative percent difference
RTK	Real-Time Kinematic
SEL	Severe Effects Level
SEL	Southeast Leg
SES	Sevenson Environmental Services, Inc.
SESCP	Soil Erosion and Sediment Control Plan
SRWMP	Site Remediation and Waste Management Program
TOC	Total Organic Carbon
TRSR	Technical Requirements for Site Remediation
TSCA	Toxic Substance Control Act
TSS	Total Suspended Solids
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
Weston	Weston Solutions, Inc.
ZAA	Z-Aspartic Acid





## 1.0 INTRODUCTION

This Remedial Action Report (RAR) has been prepared by Weston Solutions, Inc. (Weston) to document the remediation of a portion of the Hatco Corporation (Hatco) site located in Woodbridge Township, Middlesex County, New Jersey. The Hatco remediation project is tracked as New Jersey Department of Environmental Protection (NJDEP) Site Remediation and Waste Management Program (SRWMP) Preferred Identification (ID) Number G000003943. This RAR documents remediation at Hatco Area of Concern (AOC) 24 – Woodbridge Pond. AOC 24 consists of pond bottom sediments containing polychlorinated biphenyl (PCB) and bis[2-ethylhexyl]phthalate (BEHP) contamination that migrated from the Hatco site. The site location is shown on Figure 1-1. Figure 1-2 shows the relative locations of AOCs associated with the Hatco remediation project.

This report was prepared to document the remediation completed in accordance with applicable regulatory requirements including existing agreements with the United States Environmental Protection Agency (USEPA) under the *Toxic Substances Control Act* (TSCA), 40 Code of Federal Regulations (CFR) Chapter I, Subchapter R, Part 761, the NJDEP *Administrative Requirements for the Remediation of Contaminated Sites* (ARRCS) specified at New Jersey Administrative Code (N.J.A.C.) 7:26C and the *Technical Requirements for Site Remediation* (TRSR) specified at N.J.A.C. 7:26E. The SRWMP case is currently overseen by the Licensed Site Remediation Professional (LSRP) of Record for the Hatco case: Mark Fisher (LSRP License No. 586626). This RAR is accompanied by applicable NJDEP Site Remediation Reform Act (SRRA) Forms submitted online, consisting of:

- Case Inventory Document
- Updated Receptor Evaluation (RE)
- Remedial Action Report Form
- Authorization to Submit Online

Documentation of transmitting copies of the updated RE to municipal, county and state agencies is maintained in the LSRP's case file, which will be transmitted to NJDEP when a final Response Action Outcome (RAO) is issued.

## 1.1 PROJECT BACKGROUND

The Hatco site is located at 1020 King Georges Post Road, Fords, Woodbridge Township, New Jersey. AOC 24 is located at the northeastern corner of the intersection of Riverside Drive and Mac Lane. The property is identified on the Woodbridge Township Tax Map as Block 71, Lot 7. Figure 1-3 shows current tax lot and block numbers for the Hatco and Woodbridge Pond sites as well as nearby properties.

Through an environmental liability transfer Weston assumed responsibility for environmental contamination resulting from pollution conditions that occurred prior to November 4, 2002 at the Hatco site. Weston's obligations and requirements for the Hatco remediation project are described in the following documents:





- Risk-Based Disposal Approval, dated March 30, 2005, issued by letter from USEPA to Weston (Appendix A)
- Remediation Agreement, dated April 8, 2005, by and between Hatco, W.R. Grace & Co.-Conn., Remedium Group, Inc., and Weston (Appendix B)
- Natural Resource Damages Settlement Agreement dated April 8, 2005, between the NJDEP, Hatco, W.R. Grace, Remedium, and Weston and the associated Natural Resource Damages Release executed by NJDEP on May 11 and 12, 2005 (Appendix C)
- Settlement Agreement between Hatco, Debtors, NJDEP, Weston and ACE American Insurance Company (ACE) entered into on April 8, 2005 (Appendix D)
- Administrative Consent Order recorded August 16, 2005, issued by NJDEP to Weston and ACE (Appendix E)

The Hatco site is located on property that is currently owned and operated by LANXESS Solutions US Inc. (LANXESS) as a specialty chemical manufacturing facility. The Woodbridge Pond property is owned by Woodbridge Township and is vacant. The remediation discussed in this RAR was conducted on the Woodbridge Township property.

## **1.2 REMEDIATION STANDARDS**

The remediation and monitoring activities described in this RAR were performed in accordance with the approved Remedial Action Workplan (RAWP) and associated addenda. The scope of work is described in detail in the following documents:

- *Consolidated RAWP* prepared by Weston and dated August 18, 2005 (Weston, 2005) (Appendix F)
- *Addendum No. 3 to the Consolidated RAWP* prepared by Weston and dated August 24, 2009 (RAWPA3) (Weston, 2009b) (Appendix G)
- Response to USEPA April 9, 2010 Comments to RAWP Addendum No. 3, letter prepared by Weston and dated May 3, 2010 (Appendix G)
- *Addendum No. 4 to the Consolidated RAWP* prepared by Weston and dated August 29, 2017 (RAWPA4, Weston, 2017) (Appendix H)

RAWPA4 was approved by the USEPA on December 20, 2017 and by the LSRP on September 5, 2017, when the LSRP certified and filed the RAWP with NJDEP (Appendix I).

The remediation activities described in this report were conducted between March and September 2019. This remedial action achieved the applicable remediation standards as specified in the approved RAWPA4.

- 22 mg/kg (milligrams per kilogram) for BEHP; and
- 1 mg/kg for PCBs in sediment (dry weight basis).

## **1.3 PERMITS AND APPROVALS**

The following permits and approvals were obtained for this remediation project:

Approvals:





- USEPA Approval of RAWPA4 by letter dated December 20, 2017 (Appendix H)
- LSRP certification of RAWPA4 filed with NJDEP on September 5, 2017 (Appendix I);
- Woodbridge Township approvals and granting of an Access Agreement to conduct the remediation (Appendix J); and
- Licensed Site Remediation Professional (LSRP) approvals of clean fill (Appendix K).

Permits (Appendix L):

- NJDEP Flood Hazard Area (FHA) Applicability Determination dated August 10, 2018;
- NJDEP Freshwater Wetlands General Permit 4 (FWGP4) Hazardous Site Investigation and Cleanup Water Quality Certificate dated September 18, 2018;
- Freehold Soil Conservation District (FSCD) Soil Erosion and Sediment Control Plan (SESCP) Certification dated October 23, 2018;
- NJDEP Certificate of Exemption for Construction Activity Stormwater 5G3, dated November 6, 2018;
- NJDEP Scientific Collecting Permit to relocate herptile species outside of the work zone, dated March 22, 2019; and
- NJDEP Scientific Collection Permit to euthanize fish, dated April 8, 2019.

#### **1.4 REGULATORY TIMEFRAME**

The following regulatory and mandatory timeframes apply to this project:

- The Regulatory Timeframe for the remedial investigation and Remedial Investigation Report (RIR) was May 7, 2014. This timeframe was extended to May 7, 2016.
- The current Regulatory Timeframe for the remedial action and a final remediation document is May 7, 2021.
- The current Mandatory Timeframe for the remedial action and a final remediation document is May 7, 2023.

#### **1.5 REMEDIAL ACTION REPORT ORGANIZATION**

This report is organized to meet the reporting requirements for an RAR under N.J.A.C. 7:26E, including Section-1.6 (general requirements) and Section 5.7 (RAR requirements). This RAR also includes USEPA documentation requirements under TSCA. This report is organized as follows:

- Section 1 of this report provides an introduction to the remedial action and an overview of regulatory permits, timeframes, the report organization and a discussion of compliance with current state reporting requirements.
- Section 2 provides an overview of the Hatco Site, a description of the Woodbridge Pond property, a summary of ownership and operational history, and an overview of the physical site setting.
- Section 3 provides a summary of previous remedial investigations and actions associated with AOC 24.



- Section 4 provides a summary of the scope of work for this remedial action including remediation goals, a summary of post-excavation sampling data usability, seasonal events and variations used to evaluate the reliability of the data.
- Section 5 provides a detailed description of the remedial actions implemented.
- Section 6 discusses regulatory compliance.
- Section 7 discusses the remediation standards achieved and reaches a conclusion regarding completeness of the remedial action.
- Section 8 summarizes the total remediation costs and quantities for AOC 24.
- Section 9 provides a list of References for this RAR.

## 1.6 COMPLIANCE WITH STATE REPORTING REQUIREMENTS

For purposes of NJDEP requirements, this report is a final AOC-specific RAR for AOC 24. To facilitate review of this RAR with regard to NJDEP reporting requirements, following is a summary of the requirements defined under N.J.A.C. 7:26E-5.7 along with cross-references to the presentations within this report, where applicable:

- 1.6(a)1 Forms and Spreadsheets per 7:26C-1.6 ..... Attachment 1 to this RAR
- 1.6(a)2 Certifications per 7:26C-1.5 ..... Attachment 2 to this RAR
- 1.6(a)3 Updated Case Inventory Document..... Attachment 3 to this RAR
- 1.6(a)4 Quality Assurance Project Plan ..... Included in Appendix H
- 1.6(a)5 Sampling Data ..... Provided electronically
- 1.6(a)6 Geographic Information System compatible site plan ..... Provided electronically
- 1.6(b)1 Physical Setting ..... Section 2.2
- 1.6(b)2 Significant Events or Seasonal Variations ..... Section 4.5
- 1.6(b)3 Results and Implications of Field Measurements ..... Section 5
- 1.6(b)4 Variances and Deviations ..... Section 6.1
- 1.6(b)5 Regulatory Timeframes..... Section 1.4
- 1.6(b)6 Summary Tables of Sampling Results ..... Attached
- 1.6(b)7 Soil Boring, Test Pit and Monitoring Well Information ..... Appendix Z
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- 1.6(b)10 Significance of Library Search Data ..... Not applicable to this submittal<sup>1</sup>
- 1.10 Control of Sources and Interim Remedial Measures ..... Section 3.2.1
- 1.11 Immediate Environmental Concern ..... Not applicable to this submittal<sup>2</sup>
- 1.12 to 1.15 Receptor Evaluation..... Attachment 4 to the RAR
- 5.7(b)3 Summary of Findings and Recommendations by AOC ..... Section 7.2
- 5.7(b)4 Description of Remedial Action Implemented by AOC ..... Section 5
- 5.7(b)5 Applicable Remediation Standards ..... Section 1.2

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<sup>1</sup> Library searches were not required for this remediation project

<sup>2</sup> No IECs have been identified during this project





- 5.7(b)6 Documentation of Effectiveness of Remedial Action.....Section 7.0
- 5.8(b)7 Remedial Action Permit Application .....Not applicable to this submittal<sup>3</sup>
- 5.8(b)8 As-Built Diagrams..... Appendix M
- 5.7(b)9 Site Restoration .....Section 5.6.2
- 5.7(b)10 Total Remediation Costs .....Section 8.1
- 5.7(b)11 Wastes Generated and Disposed .....Section 8.2 and 8.3
- 5.7(b)12 Fill Material.....Section 5.1.2
- 5.7(b)13 Permits Required and Obtained.....Section 1.3

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<sup>3</sup> Remediation achieved unrestricted use standards at this AOC; no remedial action permit is required.





## **2.0 SITE DESCRIPTION AND SETTING**

### **2.1 SITE DESCRIPTION AND OWNERSHIP HISTORY**

Woodbridge Pond is located on an approximately 5.6-acre parcel northeast of the intersection of Riverside Drive (formerly Industrial Avenue) and Mac Lane in Woodbridge Township, Middlesex County, New Jersey. The open water portion of Woodbridge Pond covers approximately 2.8 acres. It is bordered to the north by wetlands and property owned by Crown Relocations (Crown). It is bordered to the east by wetlands that were reconstructed as part of the Hatco remediation project and a utility easement occupied by a Middlesex Water Company water main and overhead electric lines. It is bordered to the south and west by embankments to the adjacent roadways.

According to the New Jersey Association of County Tax Boards online records search, Woodbridge acquired the lot from Industrial Highway Corporation on September 25, 2012 through foreclosure. At that time, the pond was renamed from “Morris Pond” to “Woodbridge Pond.” Deed research conducted for this property identified the following ownership history for the lot:

- Pre-1948: Woodbridge County Sheriff
- 1948-1950: Clara Helbib
- 1950-1951: Fords Clay Company
- 1951-1983: Heyden/Heyden Newport Chemical Corp/Tenneco Chemicals, Inc.
- 1983-1985: Tenneco Eastern Realty, Inc.
- 1985-2012: Industrial Highway Corporation
- 2012-Present: Woodbridge Township

The above history is based on an Environmental Data Resources Inc. (EDR) Chain of Title Search and indicates industrial ownership from 1950 to 1983. Woodbridge Township tax maps (dated 1913, 1916, 1918 and 1943) show S.G. Brinkman with Ostrander’s Railroad (formerly Campbell’s Clay Railroad) on the eastern portion of the lot. The current lot lines and designations are shown on a Final Plat prepared for Industrial Highway Corporation and approved by Middlesex County Planning Board in 1986.

Historical documents identify the pond on this lot under various historical names, including Brinkman’s Pond, Heyden’s Pond and Morris Pond. This RAR references the pond under its current ownership as Woodbridge Pond.

### **2.2 PHYSICAL SETTING**

#### **2.2.1 Topography and Drainage**

The highest elevation for Lot 7 is approximately 20 feet above Mean Sea Level (MSL) based on the North American Vertical Datum of 1988 (NAVD88). The land slopes downward towards Woodbridge Pond at the center of the lot. Ground surface elevations and pre-remediation pond bottom elevations are presented in RAWPA4 (Appendix H). Prior to the remediation the deepest pond bottom elevation was approximately 9.5 to feet above MSL. In accordance with the approved permits and work plan the depth of the pond increased in several areas after the remediation and





the final pond bottoms in the deepest portions of the pond are approximately 8 feet MSL. Details of dredging and backfilling of the pond are discussed in Section 5.0. The deepest portion of the pond is near the outlet in the southeast corner. Appendix M includes cross sections showing pre-construction and post-construction pond bottom elevations.

The Woodbridge Pond parcel includes portions of surface water drainage channels identified as Channels A, B and C. Channels B and C originate north of the Woodbridge Pond parcel and Channel A flows near the eastern border of Lot 7. A minor channel, identified in this report as “Mac Lane Channel” begins at a stormwater outfall from Mac Lane and discharges to the southwestern portion of Woodbridge Pond. Figure 2-1 shows the location of these channels and nearby wetlands.

Woodbridge Pond is primarily fed by groundwater (see Section 2.2.3). Surface water enters the pond from Channel C, Mac Lane Channel and surface runoff from the property to the north, Crown.

Surface water discharges from the southeast corner of Woodbridge Pond. Water flows easterly and combines with flow from Channel A and Channel B, then continues southward through a culvert under Riverside Drive.

Almost all of Lot 7 is mapped as either Open Water or Wetlands (Figure 2-1). Several types of wetlands are present: State Open Water/Palustrine Aquatic Bed, Palustrine Emergent Wetlands, and Forested Wetlands. Specific wetland mapping is included with wetlands permit in Appendix L.

Deciduous wooded wetlands are present to the north and northwest. The pond shoreline is irregular and steep slopes are present along Mac Lane to the west. A berm associated with the former Campbell’s Clay Railroad forms the boundary of the pond to the east. Vegetation present on the non-inundated portions of the parcel include small trees, brush and common reed.

### **2.2.2 Soils and Geology**

According to the Soils Geographic Information System (GIS) layer on NJGeoWeb, site soils are mapped as Atsion sand, 0 to 2 percent slopes (Figure 2-2). This soil is described as poorly drained with very high runoff. For this soil type, depth to groundwater is generally 0 to 12 inches. Field observations during this project were consistent with the mapped soil classification. The southwestern corner and southern edge of the pond are comprised of fill and disturbed ground. The southern shore of the pond was reworked during construction of a sewer line along the northern side of Riverside Drive in 1966.

Woodbridge Pond lies within the northernmost extent of the Coastal Plain Physiographic Province of New Jersey. Surficial geology is identified as Quaternary Age weathered coastal plain formations consisting of sand and clay with thin, patch alluvium and colluvium, and pebbles left from erosion of surface deposits. The Raritan Formation, described as clayey silt overlying quartz sand, underlies this surficial unit. Figure 2-3 provides a generalized geologic cross-section across the pond.





### **2.2.3 Hydrogeology**

Surface water elevation in the pond is normally between 13.1 and 13.6 feet MSL. Water levels measured in nearby monitoring wells show groundwater to be approximately 14 feet MSL. Observed water levels remain generally consistent in the pond during wet and dry seasons. The observed groundwater and surface water conditions are consistent with the conclusion that Woodbridge Pond is fed primarily by groundwater discharge with minor influence from surface water runoff. Details regarding site groundwater conditions are presented in the RIR (Weston, 2016).

### **2.2.4 Receptor Evaluation Update**

An updated RE accompanies this RAR. Woodbridge Township intends to open the property for recreational use. The pond will be restocked with fish by NJDEP and the Township intends to open the area for recreational fishing. This planned land use change is noted on the RE form.

Woodbridge Pond is considered to be an ecological receptor and it has been remediated to USEPA-approved and NJDEP-approved remediation goals for PCBs and BEHP.

The previous RE submitted for the Hatco site was filed with the RIR in May 2016. Since that time additional remediation has been completed and no new impacted receptors or media have been identified.





### **3.0 PREVIOUS REMEDIAL ACTIONS**

#### **3.1 AREAS OF CONCERN**

The current designations of the AOCs associated with the Hatco site are described in detail in the RIR dated May 2016, prepared by Weston. The locations of the AOCs are shown on Figure 1-2 and are currently designated as follows:

- AOC 1: Closed Former Lagoons
- AOC 2: Former Pond
- AOC 3: Rail Siding Area
- AOC 4: Ester I Building and Acid Tank Farm
- AOC 5A: Ester II and Areas East and South
- AOC 5B: Former Truck Unloading Area
- AOC 6: Former Phthalic Anhydride Process Area
- AOC 7A: Former Phthalic Anhydride Residue Area
- AOC 8: Former Tarry Area
- AOC 9A: Ester I Tank Farm
- AOC 9B: Alcohol Tank Farm
- AOC 9C: Naphthalene Tank Farm
- AOC 9D: Scale House Tank Area
- AOC 9E: No. 6 Fuel Oil Aboveground Storage Tanks (AST)
- AOC 10A: Current Drum and Waste Storage Area
- AOC 10B: Former Drum and Waste Storage Area (North of Warehouse 5)
- AOC 10C: Former Drum and Waste Storage Area (West of Warehouse 4)
- AOC 11A: Former 1,000-Gallon Fuel Oil UST North of Maintenance Building
- AOC 11B: Salt USTs
- AOC 11C: Former Maintenance Building Gasoline UST
- AOC 12A: Electrical Substation
- AOC 12B: Former Transformer Location South of Substation
- AOC 12C: Transformer UE-7 North of Naphthalene Tanks
- AOC 12D: Boiler Building Transformers UE-2, UE-3A and UE-3B
- AOC 12E: Transformer UE-6 in Z-Aspartic Acid (ZAA) Process Area
- AOC 12F: Transformers UE-4B and UE-5B at Alcohol Tank Farm
- AOC 12G: Transformer UE-4A at Administrative Building
- AOC 12H: Transformer UE-5C West of Warehouse No. 4
- AOC 12I: Transformer UE-8 South of Naphthalene Tanks
- AOC 12J: Transformer UE-5A at Effluent Pretreatment Plant
- AOC 12K: Pole Mounted Transformer
- AOC 13: Southeast Fill Area
- AOC 14: Naphthalene Area
- AOC 15: Site-wide Groundwater





- AOC 16: Research and Development Laboratory
- AOC 17: Clean Fill Area
- AOC 18A: Pilot Plant I
- AOC 18B: Pilot Plant II
- AOC 19: ZAA Process Area
- AOC 20: Area East of Slingtail Creek
- AOC 21A: Channel A
- AOC 21B Slingtail Creek
- AOC 22: Sewer System
- AOC 23: Channels B and C
- AOC 24: Woodbridge Pond
- AOC 25: Channel D

AOC 24: Woodbridge Pond is the subject of this RAR.

### **3.2 SUMMARY OF PREVIOUS REMEDIAL ACTIONS**

Historical releases on the Hatco property resulted in contamination both on and off the Hatco site, including the adjacent stream channels. Contaminated sediment was transported from the Hatco property to Woodbridge pond via runoff. The contaminated sediment was deposited where Channel C discharges to the northeast portion of the pond and fanned outward to cover the central and eastern portions of the pond bottom.

#### **3.2.1 Hatco Source and Pathway Control Measures 2010 to 2013**

Weston has completed the following source control activities at the Hatco site:

- Abandonment and closure of two former wastewater lagoons.
- Excavation of impacted soils on the Hatco plant property. This included remediation and restoration of soil and sediment associated with Channels A, B and C between 2010 and 2013.
- Remediation of the Southeast Leg (SEL) portion of the Hatco site during 2014 and 2015, which included removal of accessible Light Non-Aqueous Phase Liquid (LNAPL) and completion of a barrier to prevent migration of LNAPL that remains beneath the existing chemical plant. LNAPL recovery operations are ongoing at the Hatco site.

Completing source control and remediating surface water pathways were key steps to ensure that remediation of Woodbridge Pond will remain protective of human health and the environment.

#### **3.2.2 Investigation and Delineation from 2007 to 2012**

The Morris Pond Delineation Report (Appendix N) was completed in 2012 to summarize results of investigations and remediation activities on Parcel 7 from 2007 to 2012. The current Woodbridge Pond was known as Morris Pond in 2012.





Weston completed six rounds of sampling to delineate PCB and BEHP contamination in Woodbridge Pond sediments. These sampling events included 190 samples collected from 55 sampling locations within the pond and four locations in the Mac Lane channel southwest of the pond. Sample results for the Mac Lane channel and the western side of the pond indicated concentrations of PCBs and BEHP in sediment were below the applicable remediation standards or not detectable.

### **3.3 FINAL POND BOTTOM DELINEATION**

Weston prepared a Sampling and Analysis Plan for Woodbridge Pond on February 11, 2014 and collected additional sediment samples to complete the BEHP and PCB delineation. The sampling process and results were detailed in the Hatco RIR (Weston, 2016). Results of the final delineation sampling were used to develop RAWPA4.

### **3.4 SUMMARY OF FINDINGS AND RECOMMENDATIONS FROM THE RIR**

The RIR concluded that delineation of AOC 24 was complete. Remediation of PCB and BEHP sediment impacts was required. As discussed in Section 5.3.1.5, during the remediation effort Weston determined that contaminated sediments extended north of the pond as mapped prior to the remediation. The northern limit of open water was masked by phragmites root mat which grew into the pond after the sediments were contaminated. This area was delineated and remediated as part of the Woodbridge Pond remediation project.





## **4.0 REMEDIAL ACTION SCOPE OF WORK**

### **4.1 SCOPE**

The Woodbridge Pond remediation project addressed removal of sediments that were contaminated by historical discharges from the Hatco site. The approved scope of work is described in RAWPA4 (Appendix H).

RAWPA4 and the permit applications anticipated wet dredging to accomplish the remediation goals. However, mechanical dredging was subsequently determined to be a more effective approach and was employed for the remediation.

Prior to dredging, the pond was surveyed and a staff gauge was installed to provide a reference for water level measurements throughout the project. The pond survey included establishing a grid for use in post-excavation sampling. The pre-construction pond survey was also used to verify that the post-excavation pond bottom elevations were suitable for re-establishing the existing native wetland plant communities.

Pond sediment was removed to the target elevations using mechanical dredging equipment controlled by global positioning system (GPS) technology. Final bottom elevations were within 0.1 foot of the target elevations except in cases where additional removal was required due to post-dredging sample exceedances. Dredged sediment was placed into scows and transferred to a processing area. An excavator was used to move the sediment from the scows into steel hoppers for stabilization with Portland cement.

After the sediment was stabilized onsite it was shipped offsite for disposal at approved licensed disposal facilities. Sediment containing 50 mg/kg or greater PCBs (dry weight basis), based on in-situ sample data, was managed separately from the sediments containing less than 50 mg/kg PCBs.

Stabilized sediment was loaded into trucks and transported from the site under manifest to the approved disposal facilities. Waste shipments were recorded and tracked on manifests signed by Weston as Generator and bearing the USEPA Generator ID Number obtained for Woodbridge Pond sediment remediation Project, NJR986660751.

Weston restored the remediation areas in accordance with the applicable permits. Weston is currently monitoring and maintaining the restored vegetation and to ensure that the restoration is effective. Vegetation and erosion is monitored and maintained on a monthly basis until 85% coverage is established in accordance with the certified Soil Erosion and Sediment Control Plan. Wetland recovery is monitored annually for a minimum of five years from project completion in accordance with the approved wetland disruption permit.

### **4.2 REMEDIAL ACTION VERIFICATION**

Post-excavation samples were collected as soon as practicable after each area of the pond bottom was dredged to the target elevation. The samples were collected at pre-defined grid nodes established by survey. Samples were collected from the base and top of the excavation area sidewalls at locations where the perimeter of the excavation intersected the sampling grid rows





and columns. Contingency sidewall samples, if needed, were collected from the 0.0 to 0.5-foot depth interval in the unexcavated pond bottom approximately 5 feet radially outward from each of the post-excavation sidewall locations. If the top of the excavation was 5 feet or less from the soil at the edge of the pond, then the horizontal contingency sample was collected from sediment at the edge of the pond.

Post-excavation bottom samples were also collected from grid nodes within excavated areas. Where practicable, contingency samples were collected one foot below the bottom of the excavation at each bottom location.

RAWPA4 originally called for using some delineation phase samples as post-excavation samples; however, EPA objected to the use of samples at two locations and approved the other proposed locations. Details regarding which locations were approved are in the comment and response documentation included in the front of RAWPA4 in Appendix H. The post-excavation sampling program used only approved delineation samples for remedial action verification.

### **4.3 FIELD DOCUMENTATION**

The following types of field data were recorded for this project:

- Field notebooks documenting daily progress
- Sediment logs
- Air monitoring records
- Turbidity readings
- Decontamination plans and documentation
- Waste disposal manifests
- GIS coordinates for sample locations
- Field surveys by a NJ Licensed Professional Land Surveyor
- Chain-of-Custody records

Field records are discussed in Section 5 and copies of applicable documents are provided in the appendices to this RAR.

### **4.4 DATA USABILITY ASSESSMENT**

Laboratory analytical data were evaluated for usability to verify remedial action completeness in accordance with the updated Hatco Quality Assurance Project Plan (QAPP) provided in RAWPA4 (Appendix H). The review included each of the components required in a Data Usability Assessment (DUA) for precision, accuracy, representativeness, completeness, comparability and sensitivity as specified in “Data Quality Assessment and Data Usability Evaluation Technical Guidance” (NJDEP, Version 1.0, April 2014). Copies of laboratory analytical data packages are provided in Appendix O and Data Usability Reports completed by Weston’s data reviewer are provided in Appendix P. As noted in Appendix P, a full data validation was conducted for samples collected on May 2, 2019, laboratory report 460-180982, to assess laboratory’s general analytical performances and data quality. A standard DUA was performed for each of the remaining laboratory data packages.





Results of the DUA are summarized below. Data quality flags were added to data tables and figures where the DUA identified data quality limitations. No analytical data were rejected by the DUA for this project.

#### **4.4.1 Precision**

Quality control (QC) samples were collected in accordance with the QAPP. Because Volatile Organic Compounds (VOCs) were not analyzed, no trip blank samples were required during this project. Field blank samples were generated by pouring laboratory-provided analyte-free water over decontaminated sampling equipment consisting of the drive shoes and sample core barrels.

Laboratory-blind field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples were collected at a rate of 1 per 20 field samples as applicable. Laboratory-blind duplicate samples and MS/MSD samples were created by filling multiple sets of sample containers using homogenized sediment. Scoops of homogenized sediment were placed alternately into each container until all containers were filled.

Laboratory precision is commonly determined from laboratory duplicate samples. Precision is expressed as the relative percent difference (RPD) in concentrations. The laboratory duplicate samples are used to demonstrate acceptable method performance. Corrective actions are triggered when control limits are exceeded.

The precision goals for this project reflect the performance-based control limits set by the laboratory for site-specific contaminants in soils. The laboratory set its precision goal for all parameters at 10% RPD for laboratory duplicates.

$$RPD = \left\{ \frac{|R1 - R2|}{(R1 + R2)/2} \right\} \times 100\% \text{ where } R1 \text{ and } R2 \text{ are the results for the duplicates}$$

Laboratory-blind field duplicate samples are generally considered to have adequate precision when the RPD are within 35% for aqueous sample results and 40% for solid samples. The data are considered estimated if the RPD is above these criteria but less than 100% for aqueous samples and less than 120% for solid samples. Because of the lower percent solid typically found in sediment samples versus soil samples, RPDs for sediment tend to be higher than RPDs for soil. Some results were flagged as estimated based on the low percent solid measured for the sample.

During the Woodbridge Pond remediation project 14 laboratory-blind field duplicate QC samples were collected to assess the precision of the field samples. The 14 duplicate samples were analyzed for PCBs and BEHP. Table 4-1 identifies the duplicate samples, the associated field samples and the calculated RPD for each pair. All pairs in Table 4-1 are sediment matrices. The RPDs ranged from 0% to a maximum of 44.5% for PCB results and 9.5% to 101.3% for BEHP results. In several cases the targeted analytes were not detected in one or both of the samples in a pair so no RPD could be calculated for that pair. One PCB RPD and seven of the BEHP RPDs exceeded the 40% criterion specified by the QAPP. None of the duplicate pairs indicated an RPD greater than 120%; therefore all of the results are considered to be useable. No corrective actions were required.





As part of the DUA, MS/MSD pairs were evaluated when the MS/MSD samples were taken from the site-specific sample set. When no site-specific MS/MSD was available to assess matrix interference, the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) were used to reach a conclusion regarding precision.

In some cases the RPD for the MS/MSD or the LCS/LCSD indicated low precision; in those cases the data were marked as estimated. No data were rejected, but results for several samples were qualified as estimated (Appendix P).

#### **4.4.2 Accuracy**

The DUA included review of initial and continuing calibrations, internal standards, surrogate spike recoveries and analyte identification and quantitation. If these were outside of the ranges allowed by the method or specified in the project QAPP, data were flagged.

In several cases the sediment samples had a percent solid value between 10 and 30%, requiring qualification as “estimated.” In each of these cases the results were marked with a J flag on the summary tables and figures presented in this report. For cases where a low percent solid is present, additional uncertainty is indicated, but no directional bias is implied. There were also instances of samples being diluted; in these cases the “D” flag is used and the reporting limit (RL) was elevated. In cases where dilution was performed the concentration of the contaminant of concern was above the elevated RL and no data quality impact resulted.

Each of the DUA reports in Appendix P was reviewed during the preparation of this RAR to form conclusions regarding data bias and acceptability. Appendix P details the validation and usability assessment.

Potential low bias was identified in five of the sediment samples collected during this project. The data from each of these samples was inspected to assess the possible impact that a low bias would have on the conclusions regarding the adequacy of this remedial action. None of the reported results were close to a remediation goal. Therefore, the bias did not affect the data interpretation.

#### **4.4.3 Representativeness**

The field sampling process, field logs and documentation were reviewed to confirm that field samples were representative of actual conditions. The following typographical errors were found during sample logins, corrected, and laboratory data packages were re-issued:

- Sample WP-SB-AT34-I-J-0 was incorrectly logged in at the laboratory as WP-SB-AV34-I-J-0.
- Sample WP-ST-AV37-F-G-0 was incorrectly logged in at the laboratory as WP-ST-AY34-I-J-0.
- Sample WP-PB-BE40-K-L-1 was incorrectly logged in at the laboratory as WP-PB-BE40-K-L-0.
- Field team review revised the names of samples WP-STC-BN11-A-B-0 to WP-STC-BH11-A-B-0 and WP-STC-BN11-C-D-0 to WP-STC-BH11-C-D-0.
- Sample WP-STC-BK4-A-B-0 was incorrectly logged in and corrected.





The reported percent solid varied for the field sample WP-SB-BP46-K-L-0 and the duplicate. For this reason it is concluded that the sample was not fully homogenized and this duplicate pair is not considered to be representative of the corresponding sample set.

#### **4.4.4 Comparability**

Field methods were conducted in accordance with the NJDEP's Field Sampling Procedures Manual (2005, with updates). Laboratory analytical methods were SW-846-8082A for PCBs and SW-846-8270D for BEHP. These methods are approved by NJDEP and USEPA and are consistent with the methods employed for the Hatco project. Data generated during the present evaluation are comparable to data generated previously.

#### **4.4.5 Completeness**

No data were rejected and no remedial action verification samples were lost or unable to be collected. All samples were collected as specified in RAWPA4 and completeness for this project was 100%.

### **4.5 SEASONAL EVENTS AND VARIATIONS**

No major seasonal events, storms or other events impacted this project beyond temporary work stoppages. Occasional thunderstorms and heavy short-term rainfall stopped work and created temporary high water conditions and elevated turbidity readings. Table 4-2 presents a summary of the turbidity readings along with notes on weather conditions and resulting work stoppage when necessary.





## **5.0 DESCRIPTION OF REMEDIAL ACTION**

Weston retained Severson Environmental Services, Inc., (SES) of Niagara Falls, New York, to implement the remediation activities in accordance with RAWPA4. SES used mechanical dredging technology to excavate the contaminated sediment for offsite disposal. The dredged sediments were processed onsite to remove and stabilize excess water prior to shipping offsite for disposal. Decanted and excess water was filtered using a Geotube®, bag filter and weir tank. The treated water was stored onsite temporarily, characterized and shipped offsite for disposal. No treated water was discharged to the pond.

Post-excavation samples were collected to confirm remedial action effectiveness. After removing contaminated sediments, post-excavation verification samples were collected for laboratory analysis. Contingency samples were collected and held by the laboratory for analysis in the event that a post-excavation sample result exceeded the remediation standard, as described in Section 5.3.1.

The project consisted of the following primary phases:

1. Pre-construction activities including:
  - Public notification;
  - LSRP approvals of materials;
  - Regulatory notifications;
  - Waste classification sampling and facility acceptance;
  - Pre-construction baseline air monitoring; and
  - Pre-construction survey.
2. Mobilization activities including:
  - Public Utility Markout;
  - Field office and support areas;
  - Mobilization of construction equipment and personnel;
  - Installation of soil erosion and sediment controls;
  - Construction of the temporary staging and processing area;
  - Installation of the sediment processing system; and
  - Management of fish, amphibians and reptiles.
3. Construction activities including:
  - Sediment excavation and stabilization;
  - Collection and analysis of post-excavation verification samples; and
  - Backfilling of deep excavation areas.
4. Environmental monitoring of perimeter air and surface water turbidity.
5. Waste Transportation and Offsite Disposal.
6. Decontamination, Site Restoration and Demobilization.

Details of the remediation activities are discussed below. Appendix Q presents photographs that show the various phases of the remediation project.





## **5.1 PRE-CONSTRUCTION ACTIVITIES**

### **5.1.1 Public Notification**

ARRCS requires that public notification be conducted within 14 days prior to commencing field activities associated with remedial action. Specifically, local and county government agencies, owners and tenants within 200 feet of the contaminated site must be notified via either a sign posting or a letter.

Notification is provided on a biennial basis via letter. The most recent public notice was completed on March 14, 2019, in advance of the Woodbridge Pond remediation project. A copy of the public notice letter is included in Appendix R.

### **5.1.2 LSRP Approval of Fill Materials**

The following clean fill materials were obtained and approved by the LSRP. Appendix K contains documentation of the LSRP approvals and supporting documentation for the fill materials.

- Dense graded aggregate (DGA) and I-8 crushed stone aggregate were used to construct portions of the temporary staging and processing area. The DGA and crushed stone were supplied by Maddox Materials and obtained from the Tilcon Mount Hope quarry located at 625 Mount Hope Road, Wharton, New Jersey. The DGA and crushed stone were approved by the LSRP on March 6, 2019.
- Clean sand was used to construct portions of the temporary staging and processing area and as backfill in portions of the pond. The clean sand was supplied by Excavating Materials and Equipment, Inc., (EME), located at 849 County Road, New Egypt, New Jersey. The clean sand was approved by the LSRP on March 24, 2019.
- Vegetative cover was used to restore the wetland areas. The vegetative cover material was supplied by EME, New Egypt, New Jersey and was approved by the LSRP on March 24, 2019.

Appendix S contains copies of the weight tickets and associated records for the clean fill delivered during this project.

### **5.1.3 Regulatory Notifications**

The following regulatory notifications were completed prior to applicable construction phases:

1. March 11, 2019: Notification of Hazardous Waste Activity (USEPA form 8700-12). USEPA response dated March 13, 2019 assigned EPA ID Number NJR986660751 for the Woodbridge Pond site remediation by Weston.
2. March 15, 2019: email notification to USEPA of mobilization schedule and waste disposal facilities.
3. March 20, 2019: FSCD 48 Hour Advance Notice of Soil Disturbance.
4. March 20, 2019: 7-day notification to NJDEP of site preparations under the GP4 permit
5. April 1, 2019: USEPA Notice of PCB activity, confirmed by USEPA by letter dated April 11, 2019.





6. April 8, 2019: 30-day notification to NJDEP of invasive species control.
7. April 10, 2019: Notification to NJDEP prior to euthanization of fish and relocation of reptiles and amphibians.

Copies of the regulatory notifications are provided in Appendix T.

#### **5.1.4 Waste Classification Sampling and Disposal Facility Acceptance**

Between March 11 and 13, 2019, waste classification samples were collected to obtain final approvals from the disposal facilities. AquaSurvey, Inc., of Flemington, New Jersey, was retained to collect pond bottom samples from ten locations. Details regarding the waste classification sampling program are presented in Appendix U.

The waste classification samples were submitted to Chemtech laboratory, Mountainside, New Jersey, for analysis. Sediment sample results were provided to the disposal facilities with the waste profiles for approval.

- On April 15, 2019, U.S. Ecology, Inc., approved the profile for waste containing 50 mg/kg or greater PCBs for disposal at the Wayne Disposal, Inc., site in Belleville, Michigan.
- On April 19, 2019, Waste Management, Inc., approved the profile for solid waste containing less than 50 mg/kg PCBs for disposal at the Fairless Landfill, in Morrisville, Pennsylvania.

During the course of the project, the footprint of the remediation area expanded by approximately 25 percent. The expanded footprint did not contain PCB concentrations of 50 mg/kg or more. Additional waste classification samples were collected on June 12, 2019, to characterize the additional dredged material for disposal at the Waste Management, Inc., Fairless Landfill.

Wastewater generated by the dewatering activities was sampled on April 30, 2019. On May 15, 2019, Clean Water of New York approved the wastewater for disposal at the facility located in Staten Island, New York. A second wastewater sample was collected on July 17, 2019 as the quantity of water generated approached the amount approved for disposal.

Appendix V provides copies of the waste profiles. Appendix V also contains copies of supplemental approvals for additional volume. Supplemental approvals were required when the pond remediation extended further north than anticipated (Section 5.3.1.5).

Upon completion of the sampling activities the equipment was decontaminated and secured at the site pending results of wipe sample analysis. Wipe samples were collected from the core barrel, boat, hand tools, sample cone and boat paddles. All wipe sample results were below the detection limit. Decontamination procedures and wipe sample results are discussed in Section 5.6.1

#### **5.1.5 Pre-Construction Baseline Perimeter Air Monitoring**

Weston performed baseline perimeter air monitoring at the site on March 19, and 23, 2019. Perimeter air monitoring data were collected using DustTrak II™ Model 8530 Aerosol Monitors. Weather data including wind speed and direction were collected using a Davis Vantage Pro weather station.





For the baseline perimeter air monitoring, the upwind air monitoring station was set up west of the pond, on the west side of Mac Lane. Downwind data were not collected during the baseline perimeter air monitoring. Perimeter air monitoring data, including the baseline data, are presented in Appendix W.

Baseline air monitoring data were collected from 7:41 a.m. and 4:03 p.m. on March 19 and from 8:14 a.m. to 4:59 p.m. on March 23. Data were collected continuously in one-minute intervals. During this period, the average and maximum recorded particulate concentrations were 0.011 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) and  $0.048 \text{ mg}/\text{m}^3$ , respectively. The particulate action level for the project was  $7.5 \text{ mg}/\text{m}^3$  above background.

#### **5.1.6 Pre-Construction Land Survey**

Kennon Surveying Services, Inc. (KSS) of Warren, New Jersey, performed the pre-construction survey. The pre-construction survey included the layout of planned construction features including the limits of the temporary staging and processing area as depicted on the approved Freshwater General Permit 4 (see Appendix L).

Between March 25 and 29, 2019, a New Jersey Registered Professional Land Surveyor from KSS surveyed pre-construction conditions and staked the wetlands delineation line before field mobilization. KSS also identified and marked a length along Mac Lane to establish clearing limits for the storage/processing area to be constructed. KSS placed high-visibility stakes in the pond to delineate the access channel, the areas containing PCB in sediment concentration greater than  $50 \text{ mg}/\text{kg}$ , and the excavation boundary.

The surveyor provided horizontal and vertical control, annotated on a final survey map. Vertical control for the survey was provided relative to the NAVD88 datum and horizontal control was tied to the NAD 83 state plane coordinate system. All data are presented in US Survey Feet. The pond bottom survey included points on the 30-foot grid.

A base survey point was installed next to Woodbridge Pond. A staff gauge was installed in the pond and surveyed to provide a reference for water level measurements. Post-excavation sample depths were keyed to the pond bottom, and the water level at the time of sampling.

#### **5.1.7 Pre-Construction Vegetation Survey**

Prior to site preparation, an ecologist inspected the pond for native wetlands vegetation present in the pond and noted the depth requirements, for the vegetation. This pre-construction pond vegetation survey was used to verify that post sediment removal elevations are suitable for the re-establishment of existing native wetlands plant communities.

### **5.2 MOBILIZATION**

#### **5.2.1 Public Utility Markout**

The remediation contractor called for a utility markout on March 19, 2019, before work began. SES initiated One Call request number 190781154 and contacted Middlesex County Utility





Authority directly as required. Prior to mobilizing, Weston and SES met with the Woodbridge Township engineer to verify known utilities in the field and to confirm that the sewer and gas main in Mac Lane would not be affected by construction activities.

### **5.2.2 Field Office and Support Areas**

SES leased a portion of an existing building at 207 Mac Lane to serve as the field office and equipment staging area. The field office was located on the west side of Mac Lane, approximately 500 feet from the Woodbridge Pond work area. SES established a marked pedestrian crossing for safe access between the work area and the field office.

### **5.2.3 Mobilization of Construction Equipment and Personnel**

Field mobilization began on Monday, March 25, 2019. SES mobilized equipment, supplies and personnel necessary to implement the remedial action to the site.

### **5.2.4 Soil Erosion and Sediment Controls**

By letter dated October 23, 2018, FSCD certified the SESCO for the site. A copy of the certified SESCO is provided in Appendix L. On Wednesday, March 20, 2019, Weston provided the required 48-hour Advance Notice of Soil Disturbance to FSCD. SES installed the required erosion and sediment control measures as specified in the certified SESCO. Between March 25 and April 4, 2019 SES cut vegetation above grade, installed the required silt fence and installed sediment controls in the nearby storm sewer inlets.

Sediment controls were installed within and at the perimeter of the pond work areas. A turbidity curtain was installed to confine the dredging area and a filtration weir was installed at the pond outfall.

The turbidity curtain was assembled and installed prior to any disturbance of pond sediments. The turbidity curtain was inspected at the start and end of each work day at a minimum.

The weir at the pond outfall was constructed using sand bags and coir log material. The weir was used to raise the water level in the pond by approximately 0.4 feet during construction and to prevent excess erosion of the outfall channel.

### **5.2.5 Construction of Temporary Staging and Processing Area**

On March 25, 2019, Weston and SES documented preconstruction site conditions using still photographs and video recordings. After KSS had surveyed and staked the limits, SES cleared vegetation from the temporary staging and processing area.

SES constructed the temporary staging and processing area by installing steel sheet piling and placing clean sand fill material within a portion of the wetland and open water area. The sheet piling was installed around three sides of the temporary staging and processing area as shown on Bulkhead Design Drawings S-1 and S-2 (Appendix X). The cantilevered sheet piling complied with American Society for Testing and Materials (ASTM) A572. Prefabricated corners were used and sections were bolted and welded in place. The temporary staging and processing area was





filled with sand which was protected by a woven, coated polyethylene liner. Additional sand and gravel were placed on top of the liner. A 6-foot tall temporary steel chain link fence was installed to secure the temporary staging and processing area.

Construction of the temporary staging and processing area began on March 26, 2019 with the installation of a protective liner and stone to form a ramp at the curb line. A turbidity barrier was placed in the pond outside of the footprint of the temporary staging and processing area. Placement and grading of clean fill material began on March 27, 2019.

Between April 1 and 3, 2019, SES installed AZ19-700 steel sheet pilings to support the temporary staging and processing area. The sheet piles were installed using a vibratory hammer and were driven to the target elevations. The top of the sheet pilings extended approximately 2 to 5 feet above the working grade.

On April 4, 2019, SES completed the preparatory grade for the temporary staging and processing area. A protective liner was placed above the clean fill material. The protective liner consisted of 30 mil high-density polyethylene sheeting between two layers of geotextile fabric.

On April 5, 2019, approximately two feet of clean fill was placed to form a working surface above the protective liner.

On April 8, 2019, a crane was used to place hoppers and other components of the sediment processing system in the temporary staging and processing area. Components of the sediment processing system are discussed in Section 5.2.6

On April 9, 2019, a timber crane mat was installed and a CAT® 345D excavator was mobilized and assembled in the temporary staging and processing area. Additional construction equipment and materials were mobilized to the site between April 9 and 11, 2019.

Due to a delay in receiving final disposal facility approval, no onsite construction activities took place during the week of April 15 to 19, 2019. As part of the approval process, a representative from Waste Management, Inc., inspected the site on April 17, 2019.

On April 19, 2019, Severson installed and calibrated the GPS base station to guide the dredging activities.

### **5.2.6 Sediment Processing System**

The sediment processing system was designed to dewater and stabilize the dredged sediments sufficiently to meet the transportation and disposal facility requirements. The system consisted of the following primary components:

- Sediment stabilization:
  - Cat® 345D Excavator to remove sediments from scows and to mix sediments with Portland cement stabilizing agent.
  - Six 40- to 100-cubic yard steel hoppers for temporary storage and stabilization of sediments.
- Water treatment system to remove sediments, components listed in sequence:





- Lined 20-cubic yard container with Geotube™ filter bladder.
- 18,000-gallon capacity weir tank for removal of floating and sinking matter.
- Bag filter.
- 21,000-gallon frac tank for storage of water following sediment removal.

Excess water was pumped from the scow to the Geotube™ filter. Initially, the filtered water was pumped directly from the Geotube™ to the frac tank. The weir tank and bag filter were added on May 3, 2019 to improve the capacity and efficiency of the system.

### **5.2.7 Management of Fish, Amphibians and Reptiles**

Animal Arrest, LLC, of Metuchen, New Jersey completed the management of animals within the construction area. Animal Arrest obtained two scientific collection permits (Appendix L) to cover herptile relocation and fish collection. Mike Vissichlli of Animal Arrest notified Cheryl Weeks at New Jersey Division of Fish and Wildlife by email and NJDEP Northern Law Enforcement by telephone on April 10, 2019, in advance of the work.

On April 12, 2019, reptiles and amphibians were relocated outside of the construction area. Fish were euthanized and containerized for disposal with solid waste material generated during the remediation project. Appendix Y presents the results of the animal management activities. All work was performed in accordance with the scientific collection permits issued to Animal Arrest, LLC by the NJDEP.

## **5.3 POND REMEDIATION CONSTRUCTION ACTIVITIES**

### **5.3.1 Sediment Excavation and Processing**

Sediment excavation operations proceeded in the following phases:

1. Dredging of an access channel from the temporary staging and processing area to the portion of the pond that required remediation.
2. Dredging of contaminated sediments containing less than 50 mg/kg PCBs beginning in the western end of the remediation area and working eastward.
3. Verification sampling.
4. Redredging of locations where initial post-remediation verification samples indicated concentrations greater than the remediation goals.
5. Sampling and removal of contaminated sediment identified to the north of the planned remediation area.
6. Dredging of sediments containing 50 mg/kg or greater PCBs from three defined areas.

#### **5.3.1.1 Access Channel**

On April 22, 2019, SES deployed sediment barriers as needed to dredge the access channel. The access was dredged to a depth of approximately three feet to allow for the draft of the dredging equipment. The portion of the access channel nearest the temporary staging and processing area bulkhead was dredged using the Cat® 345D excavator. The excavator was then used to deploy the dredging equipment into the pond. The dredging equipment included:





- Komatsu PC120 mechanical dredge mounted on an 18- by 18-foot spud barge.
- Three 8- by 20-foot scows to transport dredged sediment.
- Light weight, shallow draft push boat to maneuver the scows and to serve as a platform for collection of post-dredging verification samples and survey data.

Between April 22 and 26, 2019, the access channel was dredged. The location of the access channel is shown on the restoration as-built survey drawing in Appendix M.

The PC120 was fitted with a 1.25-cubic yard CableArm environmental level-cut clamshell bucket. The clamshell bucket was equipped with a venting system to reduce the amount of free water generated and maximize the volume of sediment. This bucket was used for the majority of the pond dredging activities. A conventional excavator bucket was used if hard sediment was encountered.

The PC120 was equipped with Trimble Teledyne PDS positioning and tracking system that was used to control the excavator position and bucket during dredging and Real-Time Kinematic (RTK) software was used for daily tracking and volume calculations.

At each dredge area the vegetation was removed from within the dredging footprint. Vegetation that was in contact with impacted sediment was removed with the excavator bucket, crushed and mixed with the stabilized sediments for disposal as approved by the receiving facilities.

Dredged material was placed into the scow. The filled scow was relocated to the bulkhead at the temporary staging and processing area. Excess liquid was pumped from the scow to the water treatment system (see Section 5.2.6). The CAT® 345D excavator was used to transfer the sediment from the scow to the steel hopper and to stabilize the sediment by mixing with Portland cement. After the sediment had stabilized sufficiently it was loaded into 16-cubic yard triaxle dump trucks for shipment offsite. The dump bodies were fitted with disposable liners for each load.

#### **5.3.1.2 Initial Remediation Area Dredging**

Dredging of the remediation area began on April 29, 2019. Sediments containing less than 50 mg/kg were removed to the target elevations, transported to the temporary staging and processing area, and stabilized following the same procedures as discussed above for the access channel. A drip pan was installed at the bulkhead as a secondary precaution to prevent contaminated sediments from falling into the pond during transfer from the scows to the hoppers.

Beginning on May 2, 2019, the dredge reached the target depth in the eastern portion of the pond and post-excavation verification sampling began. A sample processing area was established outside of the main construction area.

#### **5.3.1.3 Post-Excavation Verification Sampling**

The post-excavation verification samples were collected after each area of the pond bottom had been excavated to the target elevations. The samples locations were determined using the 30- by 30-foot grid established in RAWPA4. The sample grid is shown on Figure 5-1.





The post-excavation verification samples were collected as close as practicable to the pre-defined grid nodes. The coordinates for the grid nodes were uploaded to the surveyors' GPS equipment. The push boat was used to transport the surveyor and sampling technician to each of the target sample locations. The surveyor verified the coordinates and depth at each location. The sampling technician then collected the pond bottom verification sample material.

When practicable the sampling technician also collected contingency samples at the time the verification samples were collected. Contingency samples were collected one foot below the bottom of the excavation at the bottom locations. Contingency step-out sidewall samples were collected from the 0.0 to 0.5-foot depth interval in the unexcavated pond bottom approximately 5 feet radially outward from the post-excavation sidewall locations. If the top of the excavation was 5 feet or less from the soil at the edge of the pond, the horizontal contingency sample was collected from sediment at the edge of the pond.

The SES sampling technician collected the verification samples using an AMS, Inc. Multi-Stage Sludge/Sediment stainless-steel sample coring device equipped with dedicated, disposable transparent polyethylene liners.

The sampling equipment was driven 1.5 to 2 feet into the pond bottom sediment or to refusal using a slide hammer. The coring device was then retrieved and the liner containing the sample material was removed, capped and marked to indicate the top of the sample. The core was maintained in a vertical position during handling and transportation to the sample processing area.

The cores were relinquished to the Weston scientist for sample logging and processing. The visible top of sediment mark was verified and recorded. Excess liquid was drained by drilling one or more small holes through the liner above the visible top of sediment. The excess liquid was collected and managed with other liquid waste generated during this project. The amount of compression was recorded.

The liner containing the recovered sample was placed horizontally and cut open to expose the sample material. The sample lithology was screened for organic vapors using a photoionization detector, described and final sample intervals selected based on the undrained recorded length of the sample core. Logs for the verification sample cores are provided in Appendix Z.

Sample material was transferred directly from the core liner to laboratory-prepared sample containers. Excess sediment and other solid waste was temporarily stored in lined drums. The liners containing the waste were later combined with the bulk solid waste for offsite disposal.

The samples were sent to Eurofins/TestAmerica laboratory in Edison, New Jersey (NJ certification number 12028) for analysis. Analytical results are summarized on Table 5-1.

#### **5.3.1.4 Redredging**

During the course of the remediation project a total of 196 post-excavation and post-excavation contingency samples were collected. The sample results are summarized on Table 5-1. Exceedances of the PCB and/or BEHP sediment criteria were reported in 31 of the post-excavation samples. Between June 24 and July 2, 2019, redredging was completed in the areas of the pond





where verification sampling indicated exceedances. In all but one of these cases (discussed below) the contingency sample results met the criteria. These locations were redredged to the depth or horizontal limits of the contingency samples that met the remediation criteria. Therefore, as specified in the approved work plan, the excavation was extended one foot vertically or five feet horizontally to the location or depth of the associated contingency sample.

Analytical results for the post-excavation bottom sidewall sample from grid location BP48 (Sample WP-SB-BP48-K-L-0-061119) exceeded the PCB and BEHP remediation criteria. No horizontal sidewall contingency sample could be collected at this location which was at the edge of the pond. An additional bottom sample was attempted in this area on June 20, 2019 but could not be retrieved due to refusal. The area was redredged vertically and horizontally on June 26, 2019. A buried vending machine was encountered and removed from the base of the sidewall in this area. Removal of the vending machine caused the lower portion of the sidewall to collapse. The sediment was removed to the horizontal limit of the pond and no additional dredging or bottom verification sampling could be completed safely at this location. The top of sidewall verification sample from this location, sample WP-ST-BP48-F-G-0-061119, confirmed the contamination was successfully removed to the limit of the pond in this area.

### **5.3.1.5 Delineation and Remediation of Northern Wetland Area**

As shown on the wetland disruption permit (Appendix L), a wetland enhancement area was planned to replace phragmites growing along what was believed to be the northern shore of the pond. On May 16, 2019, KSS surveyed and staked out the limits of the planned wetland enhancement area north of the pond. SES began clearing the planned wetland enhancement area on May 20, 2019. During clearing operations standing water was observed throughout the wetland enhancement area. This condition was initially attributed to the fact that the water level in the pond had been raised several inches by placement of sediment controls at the outfall.

Post-excavation side-wall samples were collected from the northern limit of the pond, adjacent to the planned wetland enhancement area beginning on May 21, 2019. Contingency step out samples were required because several of the post-excavation verification sample results exceed the remediation criteria.

During vegetation clearing activities in late May, Weston determined that the planned wetland enhancement area was in fact state open water. The original delineation interpreted the vegetation root mat as wetland. However, once the root mat had been removed it became clear that the pond extended further northward than originally mapped.

Weston delineated the extent of contaminated sediment within and north of the planned wetland enhancement area. The delineation samples were collected using a stainless steel 4-inch diameter hand auger. Sample material was transferred to laboratory prepared sample containers using dedicated disposable polyethylene trowels.

The extent of contamination to the north is consistent with historical discharges from the Hatco site in the 1960s, which migrated into and across the northeastern portion of the pond. Presumably





the vegetative root mat was not present, or much less time at the time of the historical discharges and the contaminated sediment migrated into the northern area.

On June 6, 2019, Weston flagged the northern extent of open water in this area. On June 10 and 11, 2019, Weston contacted Suzanne Dietrick at NJDEP, the LSRP and the property owner to advise of the corrected interpretation of conditions and received verbal approval to extend the dredging into the planned wetland enhancement area and as far as necessary to remove all contaminated sediments to the north. Ms. Dietrick followed up with a confirmation email message on June 12, 2019.

Between June 19 and July 31, 2019 additional sampling and sediment dredging were performed within and north of the planned wetland enhancement area. Weston determined that the contamination extended onto a small portion of the Crown Relocations property to the north. On July 2, 2019, Weston obtained approval from the property owner to access the property for sampling and remediation. A copy is included in Appendix AA.

After receiving approvals, excavation continued northward until remedial action verification sampling confirmed that the remediation had been completed within AOC-24. Figure 5-2 shows the extent of the northern expansion of the pond remediation. Table 5-2 details the samples collected, depths and results. Samples which were impacted and later removed are flagged as “excavated.”

Contaminated material was dredged to the area of the property boundary. An isolated area of PCB contaminated sediment was detected on the Crown property outside of the area covered by the approved remediation permit. This area, which falls within Hatco AOC-23, was delineated and staked. A permit modification will be prepared for separate remediation of this area.

Between August 5 and 16, 2019, the mapped wetland area north of the planned wetland enhancement area was backfilled and restored. The wetland area was seeded and erosion controls installed on August 21 and 22, 2019. Final wetland plantings were installed during restoration activities (see Section 5.6.2.1). The planned wetland enhancement was removed from the project because the area was determined to be open water, not wetland.

On August 21, 2019, Weston provided an as-built drawing to NJDEP in accordance with the approval received on June 11 and 12. The drawing showed the final surveyed wetland excavation limits. Copies of NJDEP communications regarding excavation expansion to the north are in Appendix AA.

#### **5.3.1.6 Dredging Areas with PCBs 50 mg/kg or Greater**

Between July 8 and 11, 2019, dredging operations were completed in the three areas containing PCB concentrations of 50 mg/kg or more. This material was segregated and handled separately from other waste generated during the project. During remediation of these areas the eastern-most hoppers (designated as Hoppers 1, 2 and 3) were labeled and dedicated for stabilization of the sediments from the three areas. The sediments from these three areas were stabilized and loaded out for disposal between July 10 and 17, 2019. Details regarding waste disposal are discussed in





Section 5.5. The excavator bucket and hoppers were decontaminated after stabilizing and loading out the sediments from these three areas.

### **5.3.2 Backfilling**

As specified in RAWPA4, the dredging program was intended to deepen the pond, enhancing the habitat for fish. Fill material was used in areas that were dredged to depths that were considered too deep to support aquatic vegetation (typically greater than six feet deep) and in areas where it was necessary to reduce the steepness of underwater slopes for bank stability and to avoid sloughing.

Placement of clean fill began on July 1, 2019, along the eastern edge of the pond. This clean sand was placed to establish a stable slope where material had been dredged to the shoreline. Clean fill was used to restore the northern wetland area between August 14 and 16, 2019.

As specified in the approved work plan, a portion of the clean fill material used for the temporary staging and processing area was tested and reused as backfill material. On August 27, 2019, seven discrete samples were collected from the clean fill under the protective liner. The samples were designated WP-PAD01 through WP-PAD07. The sampling frequency corresponded to one sample per 1,000 square feet of material. The samples were analyzed for PCBs and BEHP. Neither contaminant was detected in the samples. On August 28, 2019 Weston transmitted the sample results to Dr. James Haklar to notify USEPA of the results. The reused material was placed in the deeper portions of the pond as proposed in RAWPA4. Appendix AB contains the reuse sample documentation.

## **5.4 ENVIRONMENTAL MONITORING**

### **5.4.1 Turbidity Monitoring**

Turbidity monitoring was performed during construction activities in and adjacent to the pond. Surface water monitoring criteria for this project were 50 Nephelometric Turbidity Units (NTU) at any time and 15 NTU average. Table 4-2 provides a summary of the turbidity readings along with calculated averages.

After installation of the turbidity and sediment controls two monitoring locations were established. The upstream monitoring location was established at the Mac Lane channel. This location monitored water flow from the storm sewer into the pond and established upstream conditions outside of the work area. The downstream monitoring location was established just beyond the pond outfall at the lower portion of Channel C.

A YSI 650 MDS turbidity meter was used for monitoring. Measurements were obtained near the middle of the water column.

Turbidity monitoring data and observations are summarized on Table 4-2. During the course of the project there were no exceedances of the 15 NTU average criterion and one exceedance of the 50 NTU instantaneous criterion. The exceedance occurred August 8, 2019 at 7:35 a.m. This exceedance was due to very heavy rainfall and flooding during the preceding day; it was not due





to construction activities. Construction work was halted until the downstream turbidity reading declined below the criterion.

#### **5.4.2 Perimeter Air Monitoring**

Perimeter air monitoring was performed following the procedures described in the Air Monitoring and Odor Control Program (AMOCP), which was included as part of RAWPA4. The purpose of the AMOCP was to ensure that the project team and members of the general public were not exposed to airborne contaminants generated by remediation. This plan is in addition to the site-specific Health and Safety Plan (HASP) that prescribed monitoring and protective equipment for personnel working on this project.

Two perimeter air monitoring stations were established. Each station was equipped with a DustTrak II™ Model 8530 Aerosol Monitor as discussed in Section 5.1.5. The upwind station included a Davis Vantage Pro™ weather station to measure and record wind speed and direction.

Each day the perimeter air monitoring stations were set up at downwind (WESTON1) and upwind (WESTON2) locations. The stations were relocated if the primary wind direction changed during the course of the work day.

The perimeter air monitoring action level for particulate matter was 7.5 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) for this project. The action level was not exceeded and the highest airborne concentration recorded at the perimeter during the project was  $0.67 \text{ mg}/\text{m}^3$ . Perimeter air monitoring data are presented in Appendix W.

### **5.5 WASTE TRANSPORTATION AND DISPOSAL**

The following waste streams were generated during this project:

- Bulk non-hazardous solid waste consisting of stabilized sediment and other dredged materials from areas containing less than 50 mg/kg PCBs disposed in accordance with 40 CFR 761.61(a)(5)(i)(B)(2)(ii). This material was disposed at the Fairless Landfill which is permitted to manage non-municipal non-hazardous waste.
- Bulk PCB Remediation Waste consisting of stabilized sediment and other dredged materials from areas containing 50 mg/kg or greater PCBs disposed in accordance with 40 CFR 761.61(a)(5)(i)(B)(2)(iii). This material was disposed at the Wayne Disposal, Inc., site in Belleville, Michigan, which is a permitted hazardous waste facility for PCB disposal.
- Drummed PCB Remediation Waste consisting of residual decontamination waste and materials generated during decontamination of equipment that came into contact with the Bulk PCB Remediation Waste. This material was disposed at the Wayne Disposal, Inc., site.
- Non-hazardous wastewater decanted from scows and from decontamination of equipment. This material was disposed at the Clean Water of New York site.

The PCB Remediation waste material handling equipment and procedures met the requirements of 40 CFR 765.65 Storage for Disposal. Table 5-3 summarizes the total quantities disposed. Waste shipments were recorded and tracked on manifests which Weston signed as the Generator using





the USEPA Generator Identification Number obtained for the Woodbridge Pond Remediation project NJR986660751. Waste disposal manifests and shipping documentation are provided in Appendix AC, Appendix AD and Appendix AE.

### **5.5.1 Non-Hazardous Solid Waste**

Bulk non-hazardous solid waste consisted primarily of stabilized sediments that had been excavated from portions of the pond containing less than 50 mg/kg PCBs. Additional solid waste mixed into the stabilized sediments included crushed vegetation, used liner material, and clean fill material that could not be reused onsite. This material was approved for disposal at the Fairless Landfill (see Section 5.1.4).

Stabilized non-hazardous solid waste was loaded into 16-cubic yard triaxle dump trucks for transportation to the disposal facility. Transportation of the non-hazardous solid waste was provided by the following A-901 licensed transporters:

- Horwith Trucks, Inc./L.V. Co. Inc., Northampton, Pennsylvania, EPA ID Number PAD146714878: 408 shipments
- Caner Transportation, LLC. Moorestown, New Jersey, DOT Number 823344: 11 shipments
- J&D Trucking, Inc. Vineland, New Jersey, EPA ID Number NJR000029967: 2 shipments

A plastic liner was spread across the truck loading area and the truck was backed into the loading area from Mac Lane. Prior to loading, each truck was inspected and separate disposable bed liners were placed into the dump body. The CAT® 345D excavator was used to place the bulk non-hazardous solid waste into each truck. After loading, the truck was prepared for travel by covering the load in the dump body and pressure washing the tires to remove incidental materials. After the truck exited the loading area, wastewater was collected from the plastic liner. The plastic liner was then rolled and stored pending the next load. Minor amounts of stone dust were occasionally tracked into the street by the dump trucks. The dust came from the clean stone cover located between the truck loading area and curb line. The tracked stone dust was swept and removed by SES.

A total of 9,138.41 tons of bulk non-hazardous solid waste was shipped from the site for disposal at the Fairless Landfill. Table 5-4 presents a summary of the bulk non-hazardous solid waste shipments. Copies of executed shipping documents are included in Appendix AC.

### **5.5.2 PCB Remediation Waste Disposal**

Bulk PCB Remediation waste consisted primarily of stabilized sediments that had been excavated from portions of the pond containing 50 mg/kg or greater PCBs. Additional solid waste mixed into the stabilized sediments included crushed vegetation and liners. This material was approved for disposal at Wayne Disposal, Inc., site (see Section 5.1.4).

The PCB Remediation waste was stabilized and loaded in the same manner as described above for the bulk non-hazardous solid waste. Horwith Trucks, Inc., provided transportation of the bulk PCB Remediation from the site to the Susquehanna Bulk System Transload Facility located at 5800





West Side Avenue, North Bergen, New Jersey. There the bulk PCB remediation waste was transferred to lined railroad gondola cars operated by CSX Transportation (EPA ID Number FLD006921340). Four truckloads were combined in each gondola. The waste was transported by rail to U.S. Ecology (EPA ID Number MIK435642742) for disposal at the Wayne Disposal, Inc., site.

Four drums of waste were generated during decontamination of the equipment that came into contact with PCB remediation waste from areas containing 50 mg/kg or more PCBs. The drums were transported from the site by truck by EQ Northeast, Inc. (EPA ID Number MAD084814136) and EQ Industrial Services (EPA ID Number MIK435642742). The drums were disposed at the Wayne Disposal, Inc., site.

A total of 633.324 kilograms of PCB Remediation waste was shipped to the Wayne Disposal, Inc., site. Table 5-5 presents a summary of the PCB Remediation waste disposal. Copies of executed shipping documents are included in Appendix AE.

### **5.5.3 Wastewater Disposal**

Wastewater generated during this project consisted primarily of excess water that was removed from the scows prior to offloading sediments for stabilization. The wastewater was filtered onsite. The filtration system consisted of a Geotube™ filter, weir tank and bag filter. Filtered wastewater was stored temporarily in a 21,000-gallon frac tank. The wastewater was sampled for classification prior to offsite disposal (see Section 5.1.4). Used filters and filtrate were disposed with the solid waste.

The wastewater was pumped to 6,300-gallon capacity vacuum tankers operated by William J. Lauer Corp (EPA ID Number NYR000157566). The wastewater was disposed at Clean Water of New York, Inc., located at 3249 Richmond Terrace, Staten Island, New York (EPA ID Number NY0000968545).

A total of 194,705 gallons of wastewater were shipped to Clean Water of New York, Inc. Table 5-6 presents a summary of the wastewater disposal. Copies of executed shipping documents are included in Appendix AD.

## **5.6 DECONTAMINATION, SITE RESTORATION AND DEMOBILIZATION**

### **5.6.1 Decontamination**

Heavy equipment used for this project was decontaminated in the temporary staging and processing area. Heavy equipment was decontaminated using a power washer/steam cleaner. The decontamination areas for heavy equipment were lined and all decontamination residuals were collected and combined with PCB remediation waste for offsite disposal.

Reusable sampling equipment was decontaminated prior to use at each sample location and prior to removal from the site. Decontamination was performed in the temporary staging and processing area. Rinse water was collected and combined with the stabilized contaminated sediments for





offsite disposal. Reusable sampling equipment was decontaminated in the following sequence, prescribed in the *NJDEP Field Sampling Procedures Manual (August 2005), Section 2.4.1*:

- 1) Laboratory grade glassware detergent plus tap water wash
- 2) Generous tap water rinse
- 3) Distilled and deionized (ASTM Type II) water rinse
- 4) Acetone (pesticide grade) rinse
- 5) Total air dry
- 6) Distilled and deionized (ASTM Type II) water rinse

If equipment potentially contacted sediment containing 1 mg/kg of PCBs or greater, then wipe samples were collected to confirm the efficacy of the decontamination process. The wipe samples were analyzed for PCBs. If wipe sample PCB results exceeded 10 micrograms per wipe ( $\mu\text{g}/\text{wipe}$ ) of 100 square centimeters then the decontamination and wipe sampling process was repeated until satisfactory results were obtained. Two pieces of equipment required a second round of decontamination and wipe sampling before removal from the site: the drip pan and Hopper No. 3, used for sediment stabilization. Appendix AF includes a log for equipment that came into contact with potentially contaminated sediment, dates of the wipe samples and equipment removal along with laboratory reports for the wipe samples.

## **5.6.2 Site Restoration**

Site restoration activities consisted of:

1. Reconstruction and planting of the northern wetland area;
2. Dismantling and removal of the temporary staging and processing area; and
3. Restoration of wetlands and grass shoulder along Mac Lane.

### **5.6.2.1 Northern Wetland Area**

The northern wetland area was reconstructed using clean sand fill and vegetative cover approved for use on the project (see Section 5.1.2). The southern limit of the northern wetland area was established by staking coir logs along the edge of the open water in accordance with the approved permits. Coir logs and backfill were placed in the northern wetland between August 14 and 16, 2019.

On August 21 and 22, 2019, final grading, scarifying and seeding was completed in the northern wetland area by Running Brook Farms. Erosion control matting, temporary fencing and goose netting were installed to protect the seed. Wetland plantings were installed in the northern wetland area by Running Brook Farms on September 21, 2019. Plant and seed material originated from New England Wetland Plants, Inc. at 820 West Street, Amherst, Massachusetts. Receipts for furnished material and a copy of the guarantee are in Appendix AG.

This area is subject to monitoring and maintenance as required by the permit. Erosion controls are inspected on a monthly basis until adequate growth has been established to close out the certified SESCO. Five years of wetland monitoring will be completed in accordance with the wetland disruption permit. The first annual monitoring event will take place in 2020.



#### **5.6.2.2 Removal of Temporary Staging and Processing Area**

The temporary staging and processing area on Mac Lane was dismantled and removed between August 26 and September 12, 2019. A Komatsu PC300 excavator was mobilized to the site to dismantle the temporary staging and processing area.

On August 26 and 27, 2019, the upper two feet of fill material were removed for offsite disposal and the protective liner was exposed. The liner was inspected and no damage was observed. Samples were collected to confirm that the clean fill material beneath the protective liner had not been affected by remediation activities. Samples were collected, analyzed and determined to be suitable for backfill as discussed in Section 5.3.2.

On August 28, 2019, the liner was removed and the clean fill inspected. No evidence of spills or contamination was observed.

From August 29 to September 3, 2019, the sheet piling was extracted from the perimeter of the temporary staging and processing area. The sheet piles were pressure washed to remove adhered clay and soil. No wipe sampling was required because the sheet piles were not in contact with contaminated material. The sheet piles were removed from the site on September 5 and 6, 2019.

On September 4 and 5, 2019, the PC300 excavator was used to transfer clean sand fill to a clean scow and the PC120 dredge was used to place the clean fill material in deeper portions of the pond as discussed in Section 5.3.2. Between September 6 and 13, 2019, the excess clean fill material not needed for backfill was excavated and disposed offsite at the Fairless Landfill. The timber crane mats were disposed at the Fairless Landfill on September 9, 2019. The remaining silt curtains were removed on September 13, 2019, and combined with the final load of solid waste for disposal at the Fairless Landfill.

#### **5.6.2.3 Mac Lane Wetland Restoration**

The wetland area along the east side of Mac Lane was restored in accordance with the wetland disruption permit. After removal of the temporary staging and processing area, the protective liner was removed from the original soil bank along Mac Lane. The topsoil was exposed and erosion controls, consisting of hay bales and coir logs, were installed along the base of the wetland area on September 11 and 12, 2019. Additional vegetative cover material was placed on September 13, 2019. The wetland area was seeded and erosion control blankets and fencing were installed to protect the seed. On September 16, 2019, the wetland plantings were installed in the Mac Lane wetland area and water lilies were seeded in the restored access channel.

#### **5.6.3 Demobilization**

On September 18 and 19, 2019, grass seed was spread to restore the shoulder area along Mac Lane. The concrete curb was inspected and minor cracks were repaired as requested by the Woodbridge Township Engineer. All equipment and materials were removed from the site and field office as of September 23, 2019. Weston and SES completed a final walkthrough inspection with the Woodbridge Township Engineer on September 27, 2019.





On October 2, 2019, KSS completed the final as-built survey that documents the remediation. Copies of the as-built survey are provided in Appendix M.





## **6.0 REGULATORY COMPLIANCE INFORMATION**

### **6.1 VARIANCES AND DEVIATIONS**

No variances from regulations or deviations from state guidance were required to complete this project.

### **6.2 REGULATORY INSPECTIONS AND AGENCY SITE VISITS**

Representatives of Federal, State and local regulatory agencies observed remediation activities during this project.

- Woodbridge Township and their LSRP, Matthew Mauro, conducted multiple site visits during the pond dredging. Site visits occurred on April 22, May 6, May 21 and June 3 of 2019. On May 21, 2019 Woodbridge Township and a local television station recorded some of the remediation activities.
- On May 23, 2019, USEPA representatives James Haklar, Ben Conetta and Sadina Robles visited the site to observe remediation activities. Also present were Eric Ostapczuk and Jeff Hosterman of TetraTech, environmental consultants for LANXESS, the current owner of the former Hatco site.
- On June 18, 2019, Nancy Hamill of NJDEP and Gina Ferreira of USEPA visited the site, to observe the wetland remediation activities.
- On June 25, 2019, Joseph Serio of the FSCD inspected the site for compliance with the SESCO.





## **7.0 REMEDIATION STANDARDS ACHIEVED**

### **7.1 COMPLIANCE WITH APPLICABLE CRITERIA**

The Alternate Remediation Standards (ARS) for Woodbridge Pond sediment are 1 mg/kg (dry weight) PCBs and 22 mg/kg (dry weight) BEHP. The PCB ARS is based on total Aroclor PCBs and the method of compliance was point-by-point.

This project involved sediment dredging and excavation with onsite dewatering and stabilization prior to offsite disposal. The work was performed in accordance with RAWPA4 and associated regulatory approvals as discussed in Section 1.3. The remediated areas met the applicable criteria as identified in Section 1.2.

### **7.2 SUMMARY OF FINDINGS AND RECOMMENDATIONS BY AOC**

No work remains to complete the remedial action at AOC 24 except for closing out the wetlands disruption permit after the wetlands vegetation monitoring period and closing out the SESCO certification. Verification sampling confirmed that remediation goals have been met and the remedial action is complete for AOC 24, Woodbridge Pond.

An unrestricted use AOC-specific RAO will be issued for AOC 24 to close out this AOC.





## **8.0 TOTAL REMEDIATION COSTS AND QUANTITIES**

### **8.1 TOTAL REMEDIATION COSTS**

Total cost for the Woodbridge Pond remedial action was **\$7,066,456**.

### **8.2 QUANTITIES EXCAVATED**

Excavation progress was tracked on a daily basis using the GPS data for the dredging equipment. Drawings showing daily progress are included in Appendix AH. Table 8-1 presents a summary of the approximate quantities dredged during the course of the project.

The approximate total volume of material dredged was 7,153.21 cubic yards, which consisted of the following:

- 6,323 cubic yards of non-hazardous contaminated sediment containing less than 50 mg/kg total PCBs
- 428.21 cubic yards of PCB Remediation Waste consisting of sediment containing 50 mg/kg or greater total PCBs
- 402 cubic yards of uncontaminated sediment removed to create the access channel from the temporary staging and processing area to the remediation area.

### **8.3 QUANTITIES DISPOSED**

Tables 5-3 through 5-6 summarize the quantities of waste disposed offsite during this project. The total disposal quantities consisted of:

- 9,138.41 tons of bulk non-hazardous solid waste
- 631,924 kilograms of bulk PCB remediation waste
- 1,400 kilograms of drummed PCB remediation waste
- 194,705 gallons of wastewater





## **9.0 REFERENCES**

Hatco, 2005a, Remediation Agreement. April 8.

Hatco, 2005b, Settlement Agreement. April 8.

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USEPA, 2005, Letter: Risk-Based Remedy Approval. March 30.

Weston, 2005, Consolidated Remedial Action Work Plan. August 18.

Weston, 2006, Revised Addendum Letter to August 18, 2005 Consolidated Remedial Action Workplan. September 25.

Weston, 2009b, Addendum 3 to the 2005 Consolidated Remedial Action Workplan. August 26.

Weston, 2012b, Morris Pond Delineation Progress Report. August 31.

Weston, 2012c, Remedial Action Progress Report Phase 2 Wetlands Remediation Summary. October 3.

Weston, 2016, Remedial Investigation Report, Hatco Site, Fords, New Jersey. May 7.

Weston, 2017, Remedial Action Workplan Addendum 4, AOC 24: Woodbridge Pond, August 29.



## Tables



**Table 4-1 Field Duplicate Sample Results**  
**Woodbridge Pond Remediation Project**  
**Woodbridge, New Jersey**

Lab Sample Number	Field Sample Identification	Sample Date/Time	Units	Total PCBs	PCB RPD	Total BEHP	BEHP RPD
460-181345-2	WP-PB-AV34-A-B-0-050719	5/7/19 10:50	mg/kg	ND	ND	1.0	9.5%
460-181345-3	WP-PB-AV34-A-B-1-050719	5/7/19 10:55	mg/kg	ND		1.1	
460-181672-9	WP-ST-AT36-D-E-0-051019	5/10/19 14:47	mg/kg	0.64	32.7%	16	11.8%
460-181672-10	WP-ST-AT36-D-E-1-051019	5/10/19 14:52	mg/kg	0.46		18	
460-182109-3	WP-ST-BE18-C-D-0-051619	5/16/19 13:43	mg/kg	ND	ND	0.28	38.3%
460-182109-4	WP-ST-BE18-C-D-1-051619	5/16/19 13:48	mg/kg	ND		0.19	
460-183032-1	WP-SB-BS25-G-H-0-052919	5/29/19 10:47	mg/kg	ND	ND	3.6	61.5%
460-183032-2	WP-SB-BS25-G-H-1-052919	5/29/19 10:47	mg/kg	0.097		6.8	
460-183224-5	WP-STC-BB14-A-B-0-053119	5/31/19 11:20	mg/kg	ND	ND	5.4	60.2%
460-183224-6	WP-STC-BB14-A-B-1-053119	5/31/19 11:20	mg/kg	ND		2.9	
460-183436-7	WP-PB-BE40-K-L-0-060419	6/4/19 12:10	mg/kg	ND	ND	1.3	26.7%
460-183436-9	WP-PB-BE40-K-L-1-060419	6/4/19 12:10	mg/kg	ND		1.7	
460-183752-3	WP-STC-BK18-F-G-0-060719	6/7/19 10:45	mg/kg	0.11	0.0%	0.44	92.7%
460-183752-4	WP-STC-BK18-F-G-1-060719	6/7/19 10:45	mg/kg	0.11		1.2	
460-184053-11	WP-SB-BP46-K-L-0-061119	6/11/19 13:10	mg/kg	0.56	6.9%	19	101.3%
460-184053-12	WP-SB-BP46-K-L-1-061119	6/11/19 13:10	mg/kg	0.6		58	
460-184621-5	WP-PB-BP39-Q-R-0-061819	6/18/19 12:55	mg/kg	ND	ND	0.68	62.6%
460-184621-6	WP-PB-BP39-Q-R-1-061819	6/18/19 12:55	mg/kg	ND		1.3	
460-185168-10	WP-STC-BO13-C-D-0-062519	6/25/19 14:25	mg/kg	ND	ND	0.1	ND
460-185168-11	WP-STC-BO13-C-D-1-062519	6/25/19 14:25	mg/kg	ND		ND	
460-186189-1	WP-PB-BE31-A-B-0-070919	7/9/19 12:15	mg/kg	0.17	ND	5.5	20.0%
460-186189-2	WP-PB-BE31-A-B-1-070919	7/9/19 12:15	mg/kg	ND		4.5	
460-186501-1	WP-PBC-BN34-C-D-0-071219	7/12/19 12:47	mg/kg	ND	ND	0.21	52.6%
460-186501-2	WP-PBC-BN34-C-D-1-071219	7/12/19 12:47	mg/kg	ND		0.36	
460-187389-5	WP-SB-BP13-C-D-0-072419	7/24/19 11:45	mg/kg	0.14	44.5%	0.19	73.3%
460-187389-6	WP-SB-BP13-C-D-1-072419	7/24/19 11:45	mg/kg	0.089		0.41	
460-187585-11	WP-STC-BL10-A-B-0-072619	7/26/19 12:25	mg/kg	ND	ND	ND	ND
460-187585-12	WP-STC-BL10-A-B-1-072619	7/26/19 12:25	mg/kg	ND		ND	

Notes:

BEHP: Bis(2-ethylhexyl)phthalate  
mg/kg: Milligrams per kilogram, dry weight basis  
RPD: Relative percent difference  
PCBs: Total polychlorinated biphenyls

The field duplicate RPD exceeds QAPP criterion of ≤40%; data are qualified as estimated



**Table 4-2 Summary of Turbidity Readings  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Time	Turbidity (NTU)				Primary Construction Activity	Comment
		Upstream	Downstream	Above Background	Time-Weighted Average		
4/22/19	10:20	9.8	6.8	0.0	0.00	Dredging	
4/23/19	10:27	8.5	7.8	0.0	0.00	Dredging	
4/24/19	11:24	8.6	9.9	1.3	0.51	Dredging	
4/25/19	9:51	10.0	10.4	0.4	0.49	Dredging	
4/25/19	15:08	9.1	9.3	0.2	0.45	Dredging	
4/26/19	9:57	7.8	9.3	1.5	0.57	Dredging	
4/26/19	14:05	10.4	13.5	3.1	1.27	Dredging	Work halted due to heavy rain and lightning.
4/29/19	12:55	12.2	15.1	2.9	1.62	Dredging	
4/29/19	15:09	8.4	10.9	2.5	1.63	Dredging	
4/29/19	17:14	7.6	10.4	2.8	1.70	Dredging	
4/30/19	12:55	5.9	10.5	4.6	1.87	Dredging	
4/30/19	15:54	6.1	10.1	4.0	1.89	Dredging	
4/30/19	16:54	6.4	10.2	3.8	1.97	Dredging	
5/1/19	8:25	5.0	9.4	4.4	2.08	Dredging	
5/1/19	13:04	6.9	8.9	2.0	2.08	Dredging	
5/1/19	16:10	6.1	8.6	2.5	2.10	Dredging	
5/2/19	8:40	6.0	11.0	5.0	2.24	Dredging	
5/2/19	15:45	6.2	13.3	7.1	2.48	Dredging	Wildlife activity observed near downstream monitoring location.
5/3/19	10:22	6.5	13.1	6.6	3.10	None	Dredging halted at 10:00 due to weather.
5/6/19	10:19	5.3	15.0	9.7	3.84	Dredging	Noted turbidity increase at downstream monitoring location due to heavy rain over the weekend.
5/6/19	13:15	5.7	12.3	6.6	3.86	Dredging	
5/6/19	15:55	5.5	11.5	6.0	3.93	Dredging	
5/7/19	11:35	5.2	18.0	12.8	4.20	Dredging	
5/7/19	14:05	5.5	16.1	10.6	4.25	Dredging	
5/7/19	18:05	5.6	15.9	10.3	4.42	Dredging	
5/8/19	10:02	8.4	55.5	47.1	5.34	Dredging	Afternoon thunderstorms elevated pond water levels causing turbulent water at the outfall monitoring area.
5/8/19	10:45	7.8	53.2	45.4	5.51	Dredging	Installed additional turbidity controls to reduce turbidity.
5/8/19	13:15	9.3	40.6	31.3	5.66	Dredging	
5/8/19	15:17	6.8	27.4	20.6	5.75	Dredging	
5/8/19	17:48	6.6	21.4	14.8	5.94	Dredging	
5/9/19	8:45	7.0	26.6	19.6	6.25	Dredging	
5/9/19	11:49	6.8	21.1	14.3	6.31	Dredging	
5/9/19	15:30	6.7	16.7	10.0	6.41	Dredging	
5/10/19	9:55	7.1	34.2	27.1	6.93	Dredging	
5/10/19	13:25	6.5	16.4	9.9	6.95	Dredging	
5/10/19	15:50	7.2	15.0	7.8	7.01	Dredging	
5/13/19	9:55	17.8	21.5	3.7	6.78	Dredging	Overnight/morning rain.
5/13/19	14:05	14.2	21.9	7.7	6.80	Dredging	Continued rain throughout the day.
5/14/19	8:40	9.0	41.6	32.6	7.32	Dredging	Overnight/morning rain; Surface run-off noted entering monitoring location from the north.
5/14/19	11:05	12.7	38.8	26.1	7.42	Dredging	



**Table 4-2 Summary of Turbidity Readings  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Time	Turbidity (NTU)				Primary Construction Activity	Comment
		Upstream	Downstream	Above Background	Time-Weighted Average		
5/14/19	14:40	11.6	32.6	21.0	7.67	Dredging	
5/15/19	6:45	6.7	21.9	15.2	7.80	None	Recorded before dredging activities.
5/15/19	10:13	7.3	23.0	15.7	7.86	Dredging	
5/15/19	13:55	7.6	22.9	15.3	7.90	Dredging	
5/15/19	17:05	7.4	21.3	13.9	7.99	Dredging	
5/16/19	6:35	7.0	28.5	21.5	8.19	None	Recorded before dredging activities. Light overnight and morning rain noted.
5/16/19	10:20	6.0	32.8	26.8	8.30	Dredging	
5/16/19	13:05	7.1	28.8	21.7	8.36	None	Dredging halted at 13:00 due to weather.
5/16/19	15:41	7.3	27.6	20.3	8.54	None	Dredging halted at 13:00 due to weather.
5/17/19	6:35	6.8	21.1	14.3	8.62	None	Recorded before dredging activities.
5/17/19	9:20	7.1	21.9	14.8	8.65	Dredging	
5/17/19	12:45	6.7	23.3	16.6	9.10	None	Dredging halted at 10:00 due to weather.
5/17/19	13:55	13.9	22.2	8.3	9.02	None	Dredging halted at 10:00 due to weather. Visible turbidity noted at upstream location.
5/20/19	8:05	9.2	15.3	6.1	8.88	Dredging	
5/20/19	10:20	8.7	13.6	4.9	8.85	Dredging	
5/20/19	13:20	8.4	15.1	6.7	8.81	Dredging	Rain in afternoon.
5/20/19	17:35	9.0	12.7	3.7	8.70	Dredging	
5/21/19	7:20	8.6	11.6	3.0	8.61	None	Recorded before dredging activities.
5/21/19	10:30	7.9	11.4	3.5	8.57	Dredging	
5/21/19	13:39	7.8	14.5	6.7	8.54	Dredging	
5/21/19	17:05	8.2	14.5	6.3	8.50	Dredging	
5/22/19	6:25	9.7	14.1	4.4	8.44	None	Recorded before dredging activities.
5/22/19	10:35	8.9	13.2	4.3	8.40	Dredging	
5/22/19	13:05	9.2	14.9	5.7	8.36	Dredging	
5/22/19	17:49	8.9	14.9	6.0	8.32	Dredging	
5/23/19	6:45	8.4	11.4	3.0	8.20	None	Recorded before dredging activities.
5/23/19	10:29	6.5	13.5	7.0	8.16	Dredging	Occasional rain during the day. Stop work at 15:45 due to weather conditions.
5/24/19	7:20	7.2	11.8	4.6	8.11	Dredging	
5/24/19	10:35	8.1	16.2	8.1	8.11	Dredging	
5/24/19	12:55	7.4	14.3	6.9	8.00	None	Dredging halted at 12:00, site secured at 13:00.
5/28/19	7:55	9.3	11.1	1.8	7.73	Dredging	
5/28/19	9:45	8.6	13.9	5.3	7.72	Dredging	
5/28/19	13:25	9.2	11.8	2.6	7.66	Dredging	
5/28/19	16:35	6.9	9.2	2.3	7.58	Dredging	
5/29/19	7:25	10.1	7.5	0.0	7.50	None	Recorded before dredging activities.
5/29/19	9:40	11.3	7.0	0.0	7.42	Dredging	
5/29/19	14:20	11.6	7.6	0.0	7.29	Dredging	
5/30/19	6:35	7.9	8.5	0.6	7.21	None	Recorded before dredging activities.
5/30/19	10:55	9.4	10.9	1.5	7.18	Dredging	Light rain.
5/30/19	13:40	9.2	11.9	2.7	7.14	Dredging	



**Table 4-2 Summary of Turbidity Readings  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Time	Turbidity (NTU)				Primary Construction Activity	Comment
		Upstream	Downstream	Above Background	Time-Weighted Average		
5/30/19	16:55	9.3	7.2	0.0	7.04	Dredging	
5/31/19	7:25	9.0	21.9	12.9	7.09	None	Recorded before dredging. Heavy thunderstorms and rainfall over night. Pond elevation increased approximately 2 inches to 14.16 ft MSL.
5/31/19	10:55	7.6	20.3	12.7	7.12	Dredging	
5/31/19	13:50	8.8	9.6	0.8	6.95	Dredging	
5/31/19	17:05	7.9	11.1	3.2	6.77	Dredging	
6/3/19	7:25	8.0	7.9	0.0	6.60	None	Recorded before dredging activities.
6/3/19	9:10	8.9	7.1	0.0	6.57	Dredging	
6/3/19	13:25	10.3	7.3	0.0	6.51	Dredging	
6/3/19	17:05	10.1	10.6	0.5	6.44	Dredging	
6/4/19	7:35	13.2	6.4	0.0	6.39	None	Recorded before dredging activities.
6/4/19	9:50	13.5	7.4	0.0	6.36	Dredging	
6/4/19	13:55	12.5	7.8	0.0	6.30	Dredging	
6/4/19	18:15	13.1	7.7	0.0	6.23	Dredging	
6/5/19	7:30	12.5	7.5	0.0	6.18	None	Recorded before dredging activities.
6/5/19	10:40	14.3	8.6	0.0	6.15	Dredging	
6/5/19	14:40	13.1	8.8	0.0	6.10	Dredging	
6/5/19	18:05	11.5	7.5	0.0	6.04	Dredging	
6/6/19	7:25	6.5	9.0	2.5	6.01	None	Recorded before dredging activities.
6/6/19	11:25	8.9	7.9	0.0	5.98	Dredging	
6/6/19	13:40	9.1	8.3	0.0	5.94	Dredging	
6/6/19	17:35	10.1	9.6	0.0	5.88	Dredging	
6/7/19	6:25	13.9	8.8	0.0	5.71	None	Recorded before dredging activities.
6/7/19	12:05	13.1	8.8	0.0	5.47	Dredging	
6/10/19	8:20	11.5	6.8	0.0	5.35	Dredging	Rain begins at 08:00.
6/10/19	10:10	14.2	8.8	0.0	5.33	Dredging	
6/10/19	13:05	17.1	10.9	0.0	5.30	Dredging	
6/10/19	17:15	11.3	9.4	0.0	5.24	None	Dredging halted at 17:00.
6/11/19	7:20	10.7	9.3	0.0	5.21	None	Recorded before dredging activities.
6/11/19	9:45	9.6	9.6	0.0	5.19	Dredging	
6/11/19	13:35	11.3	8.2	0.0	5.16	Dredging	
6/11/19	16:55	9.0	11.1	2.1	5.13	Dredging	
6/12/19	7:25	12.4	12.9	0.5	5.10	None	Recorded before dredging activities.
6/12/19	11:05	13.2	11.6	0.0	5.06	Dredging	
6/12/19	13:55	11.5	12.2	0.7	5.01	Dredging	
6/13/19	8:20	18.3	28.3	10.0	5.04	Dredging	Heavy rain.
6/13/19	10:20	18.2	26.2	8.0	5.05	Dredging	
6/13/19	12:05	15.9	10.7	0.0	5.02	Dredging	
6/13/19	15:35	9.5	16.5	7.0	5.03	Dredging	
6/14/19	6:35	9.8	46.8	37.0	5.83	None	Recorded before dredging activities. Heavy rain overnight raised pond water level approximately 3 inches to 14.27 ft MSL.
6/14/19	8:35	10.0	42.5	32.5	6.81	Dredging	
6/14/19	11:15	10.2	44.2	34.0	7.78	Dredging	



**Table 4-2 Summary of Turbidity Readings  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Time	Turbidity (NTU)				Primary Construction Activity	Comment
		Upstream	Downstream	Above Background	Time-Weighted Average		
6/14/19	12:00	11.5	34.5	23.0	8.31	Dredging	
6/14/19	14:40	12.6	33.0	20.4	8.76	Dredging	
6/17/19	10:00	11.6	10.4	0.0	8.54	Dredging	
6/17/19	12:05	11.2	13.5	2.3	8.45	Dredging	
6/17/19	15:20	11.6	12.5	0.9	8.31	Dredging	
6/17/19	18:20	9.8	10.8	1.0	8.19	Dredging	
6/18/19	8:25	15.8	12.3	0.0	8.06	Dredging	Rain.
6/18/19	11:50	8.2	13.3	5.1	8.02	Dredging	Work halted at 13:30 due to lightning.
6/19/19	7:55	10.5	27.9	17.4	8.16	None	Recorded before dredging activities. Heavy rain overnight raised pond water level approximately 4 inches to 14.32 ft MSL. Turbulent flow at outfall.
6/19/19	10:40	9.5	26.5	17.0	8.28	Dredging	Turbulent flow at outfall due to elevated water level.
6/19/19	13:35	9.3	23.1	13.8	8.38	Dredging	Turbulent flow at outfall due to elevated water level.
6/19/19	16:50	9.8	29.9	20.1	8.57	Dredging	Turbulent flow at outfall due to elevated water level.
6/20/19	8:05	11.3	29.1	17.8	8.81	None	Recorded before dredging activities. Rain overnight, continuing this morning. Turbulent flow at outfall due to elevated water level.
6/20/19	15:05	8.3	27.0	18.7	9.13	None	Work halted due to lightning.
6/21/19	7:30	15.8	26.8	11.0	9.18	Dredging	Heavy rain overnight, continuing this morning. Turbulent flow at outfall due to elevated water level.
6/21/19	11:40	29.8	22.3	0.0	8.95	Dredging	Rain continues; turbulent flow at outfall due to elevated water level. Surface water elevation 14.4 ft MSL.
6/21/19	13:15	15.4	22.9	7.5	8.91	None	Work halted at 13:00 for crew travel.
6/24/19	7:25	11.0	8.2	0.0	8.77	None	Recorded before dredging activities.
6/24/19	10:00	8.4	7.2	0.0	8.70	Dredging	
6/24/19	13:00	8.8	7.9	0.0	8.63	Dredging	
6/24/19	16:45	10.2	9.1	0.0	8.56	Dredging	
6/24/19	18:35	9.5	10.2	0.7	8.48	None	Recorded after dredging activities.
6/25/19	7:35	6.8	14.4	7.6	8.47	None	Recorded before dredging activities.
6/25/19	11:05	7.7	14.7	7.0	8.46	Dredging	
6/25/19	16:05	8.3	13.9	5.6	8.44	Dredging	
6/25/19	18:45	9.8	15.8	6.0	8.42	None	Recorded after dredging activities.
6/26/19	7:45	11.9	19.0	7.1	8.41	None	Recorded before dredging activities.
6/26/19	9:10	11.7	21.4	9.7	8.42	Dredging	
6/26/19	12:50	12.3	22.0	9.7	8.43	Dredging	
6/26/19	15:40	12.4	21.9	9.5	8.44	Dredging	Work halted at 16:30 due to weather.
6/27/19	7:30	14.2	27.9	13.7	8.49	None	Recorded before dredging activities. Wildlife activity noted near monitoring location.
6/27/19	11:25	13.2	26.9	13.7	8.52	Dredging	
6/27/19	15:05	21.4	21.8	0.4	8.40	Dredging	
6/27/19	16:35	10.9	19.3	8.4	8.40	None	Recorded after dredging activities.
6/28/19	6:30	13.8	20.9	7.1	8.37	None	Recorded before dredging activities.
6/28/19	9:45	14.0	21.2	7.2	8.34	Dredging	
6/28/19	10:45	12.6	20.8	8.2	8.34	Dredging	



**Table 4-2 Summary of Turbidity Readings  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Time	Turbidity (NTU)				Primary Construction Activity	Comment
		Upstream	Downstream	Above Background	Time-Weighted Average		
7/1/19	7:35	15.0	7.1	0.0	8.22	None	Recorded before dredging activities.
7/1/19	9:45	14.3	7.2	0.0	8.16	Dredging	
7/1/19	14:35	15.0	8.8	0.0	7.95	Dredging	
7/1/19	17:35	14.8	12.8	0.0	7.65	None	Recorded after dredging activities.
7/2/19	7:25	11.2	8.2	0.0	7.38	None	Recorded before dredging activities.
7/2/19	11:40	14.4	8.2	0.0	7.15	Dredging	
7/2/19	17:10	14.4	6.7	0.0	6.91	Dredging	
7/3/19	7:05	12.3	6.8	0.0	6.70	None	Recorded before dredging activities.
7/3/19	10:35	13.9	8.7	0.0	6.50	Dredging	
7/3/19	12:35	12.2	11.2	0.0	6.30	Dredging	
7/8/19	7:25	18.0	5.0	0.0	6.18	None	Recorded before dredging activities.
7/8/19	11:25	18.1	5.4	0.0	6.12	Dredging	
7/8/19	13:30	15.9	5.6	0.0	6.06	Dredging	
7/8/19	17:15	12.8	6.4	0.0	6.00	Dredging	
7/9/19	8:20	12.9	9.8	0.0	5.94	Dredging	
7/9/19	13:35	13.1	8.5	0.0	5.89	Dredging	
7/9/19	16:50	12.6	6.5	0.0	5.83	Dredging	
7/10/19	7:55	13.7	15.7	2.0	5.79	Dredging	
7/10/19	10:30	16.2	6.5	0.0	5.74	Dredging	
7/10/19	13:50	16.0	7.5	0.0	5.66	Dredging	
7/10/19	16:50	13.9	6.1	0.0	5.55	Dredging	
7/11/19	7:55	12.3	6.5	0.0	5.45	Dredging	
7/11/19	10:10	14.4	7.1	0.0	5.36	Dredging	
7/11/19	16:15	8.1	9.2	1.1	5.29	Dredging	Work halted at 16:45 due to lightning.
7/12/19	7:25	8.3	22.0	13.7	5.43	None	Recorded before dredging activities. Heavy rain overnight, continuing this morning. Turbulent flow at outfall due to elevated water level. Water level elevated approximately 3 to 4 inches.
7/12/19	9:40	8.1	22.5	14.4	5.56	Dredging	
7/12/19	14:25	10.1	27.1	17.0	5.75	Dredging	
7/15/19	7:55	12.4	8.8	0.0	5.68	Dredging	
7/15/19	10:05	12.2	12.9	0.7	5.64	Dredging	
7/15/19	13:50	12.9	7.9	0.0	5.59	Dredging	
7/15/19	17:35	11.7	10.2	0.0	5.53	Dredging	
7/16/19	7:35	10.5	14.2	3.7	5.52	Dredging	
7/16/19	10:05	10.4	11.1	0.7	5.48	Dredging	
7/16/19	13:35	10.1	12.0	1.9	5.44	Dredging	
7/17/19	6:45	9.2	9.4	0.2	5.40	None	Recorded before dredging activities. Wildlife activity noted near monitoring location.
7/17/19	13:30	15.3	33.4	18.1	5.54	Dredging	
7/17/19	15:30	9.8	12.1	2.3	5.49	None	Dredging halted at 14:00 due to heavy rain.
7/18/19	6:35	8.0	38.0	30.0	5.85	None	Recorded before dredging activities. Heavy rain overnight, continuing this morning. Turbulent flow at outfall due to elevated water level. Water level elevated approximately 3 inches.



**Table 4-2 Summary of Turbidity Readings  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Time	Turbidity (NTU)				Primary Construction Activity	Comment
		Upstream	Downstream	Above Background	Time-Weighted Average		
7/18/19	11:35	7.2	31.2	24.0	6.12	Dredging	
7/18/19	15:05	6.7	25.6	18.9	6.31	Dredging	
7/19/19	7:10	6.2	19.2	13.0	6.41	Dredging	
7/19/19	10:05	6.8	21.2	14.4	6.52	None	Dredging halted at 10:00 due to heavy rain.
7/19/19	12:35	6.5	18.2	11.7	6.60	None	
7/22/19	6:35	6.5	10.5	4.0	6.57	None	Recorded before dredging activities.
7/22/19	10:35	6.6	9.6	3.0	6.54	Dredging	
7/22/19	14:35	6.8	16.8	10.0	6.57	Dredging	Work halted at 15:30 due to lightning.
7/23/19	7:35	8.6	36.0	27.4	6.71	Dredging	Heavy overnight rain.
7/23/19	11:05	7.8	28.8	21.0	6.80	Dredging	
7/23/19	14:55	6.8	50.8	44.0	7.03	Dredging	Replaced turbidity controls at outfall.
7/24/19	6:35	7.8	28.8	21.0	7.17	Dredging	Heavy overnight rain.
7/24/19	10:25	8.6	26.1	17.5	7.33	Dredging	
7/24/19	13:50	6.9	28.2	21.3	7.56	Dredging	
7/24/19	16:30	7.9	27.6	19.7	7.77	Dredging	
7/25/19	7:05	8.6	35.0	26.4	8.08	Dredging	
7/25/19	10:15	7.9	33.3	25.4	8.38	Dredging	
7/25/19	14:45	6.8	36.4	29.6	8.76	Dredging	Large snapping turtle found in downstream monitoring location. This appears to have contributed to recent elevated turbidity readings. Turtle removed and relocated at 15:00.
7/25/19	17:15	7.5	29.8	22.3	8.99	Dredging	No turbidity measurements collected on 7/26 because the downstream monitoring location was still heavily disturbed and settling following turtle relocation the previous day.
7/29/19	8:35	9.5	31.5	22.0	9.15	Sediment stabilization	No dredging or other in-water work pending laboratory sample analyses.
7/30/19	7:05	12.3	23.1	10.8	9.17	Sediment stabilization	No dredging or other in-water work pending laboratory sample analyses.
7/30/19	13:35	8.7	22.3	13.6	9.20	Sediment stabilization	No dredging or other in-water work pending laboratory sample analyses.
7/31/19	6:35	9.5	15.9	6.4	9.17	Sediment stabilization	No dredging or other in-water work pending laboratory sample analyses.
7/31/19	13:05	9.8	21.9	12.1	9.21	Sediment stabilization	No dredging or other in-water work pending laboratory sample analyses.
8/1/19	6:55	10.5	14.7	4.2	9.15	Dredging	
8/1/19	10:55	10.0	14.2	4.2	9.10	Dredging	
8/1/19	13:05	12.0	13.6	1.6	9.01	Dredging	
8/1/19	16:55	10.3	16.8	6.5	8.99	Dredging	
8/2/19	6:50	10.3	25.3	15.0	9.05	Sediment stabilization	No dredging or other in-water work pending laboratory sample analyses. Elevated turbidity is not related to site construction activities.
8/2/19	10:05	10.2	24.6	14.4	9.11	Sediment stabilization	
8/5/19	6:55	9.5	6.2	0.0	9.02	Backfill	Initiated backfill activities in northern wetland area.
8/5/19	10:05	9.4	6.0	0.0	8.96	Backfill	
8/5/19	15:35	8.6	8.8	0.2	8.91	Backfill	
8/6/19	6:40	9.4	17.8	8.4	8.90	Backfill	
8/6/19	10:05	9.5	15.3	5.8	8.89	Backfill	
8/6/19	13:00	9.4	15.2	5.8	8.87	Backfill	
8/6/19	15:50	9.2	20.5	11.3	8.88	Backfill	Work halted at 16:00 due to lightning.



**Table 4-2 Summary of Turbidity Readings  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Time	Turbidity (NTU)				Primary Construction Activity	Comment
		Upstream	Downstream	Above Background	Time-Weighted Average		
8/7/19	9:25	11.4	43.7	32.3	9.08	None	Heavy rain caused elevated turbidity at both the upstream and downstream monitoring locations. Extremely heavy rain in the afternoon. Work halted due to flash flood, hail and tornado warnings.
8/8/19	7:35	9.5	66	56.5	9.53	None	Heavy rain water level in pond. No in water work until turbidity was reduced below 50 NTU. Additional turbidity controls installed.
8/8/19	10:45	9.2	52.0	42.8	9.82	Backfill	Backfilling resumed after turbidity readings below 50 NTU.
8/8/19	13:10	7.3	41.8	34.5	10.05	Backfill	Turbulent flow at outfall due to elevated water level.
8/8/19	15:00	7.8	45.0	37.2	10.32	Backfill	Turbulent flow at outfall due to elevated water level.
8/9/19	6:55	8.5	41.5	33.0	10.53	Backfill	Turbulent flow at outfall due to elevated water level.
8/9/19	10:20	7.4	43.5	36.1	10.75	Backfill	Turbulent flow at outfall due to elevated water level.
8/9/19	13:15	7.4	39.2	31.8	10.94	Backfill	Turbulent flow at outfall due to elevated water level.
8/12/19	7:05	9.5	15.8	6.3	10.91	Backfill	
8/12/19	11:20	9.8	17.2	7.4	10.89	Backfill	
8/12/19	15:25	11.2	17.6	6.4	10.86	Backfill	
8/13/19	7:05	13.5	28.5	15.0	10.88	Backfill	Installing coir logs in wetland area.
8/13/19	10:30	10.3	24.3	14.0	10.90	Backfill	Installing coir logs in wetland area.
8/13/19	13:45	10.9	25.4	14.5	10.92	Backfill	Installing coir logs in wetland area.
8/13/19	16:20	11.2	23.9	12.7	10.93	Backfill	Installing coir logs in wetland area.
8/14/19	7:35	13.1	23.5	10.4	10.93	Backfill	Installing coir logs in wetland area.
8/14/19	11:30	9.4	20.3	10.9	10.93	Backfill	Installing coir logs in wetland area.
8/15/19	7:05	9.8	20.5	10.7	10.93	Backfill	
8/15/19	12:15	11.5	19.5	8.0	10.90	Backfill	
8/15/19	14:10	10.9	16.2	5.3	10.84	Backfill	
8/16/19	6:55	9.0	16.5	7.5	10.81	Backfill	
8/16/19	10:35	9.1	15.3	6.2	10.77	Backfill	
8/19/19	7:35	7.2	6.7	0.0	10.69	Decontamination	No in-water work today.
8/19/19	11:35	8.3	6.5	0.0	10.63	Decontamination	No in-water work today.
8/20/19	6:35	6.9	5.5	0.0	10.59	Decontamination	Partial removal of turbidity controls initiated at outfall.
8/20/19	9:15	8.2	7.3	0.0	10.54	Decontamination	
8/20/19	13:05	9.8	6.9	0.0	10.48	Decontamination	
8/21/19	7:25	6.8	6.1	0.0	10.41	Wetland restoration	
8/21/19	10:55	7.5	7.0	0.0	10.32	Wetland restoration	
8/21/19	14:05	7.8	6.8	0.0	10.23	Wetland restoration	
8/22/19	6:40	8.1	5.9	0.0	10.15	Wetland restoration	
8/22/19	10:15	9.1	6.3	0.0	10.06	Wetland restoration	
8/22/19	14:05	10.1	5.8	0.0	9.98	Wetland restoration	
8/23/19	7:05	8.0	5.6	0.0	9.90	Decontamination	
8/23/19	12:35	9.5	6.8	0.0	9.82	Decontamination	
8/26/19	7:20	15.0	5.0	0.0	9.75	Decontamination	
8/26/19	10:20	15.6	5.7	0.0	9.70	Decontamination	
8/26/19	13:35	14.2	5.4	0.0	9.65	Decontamination	
8/27/19	6:55	14.2	4.8	0.0	9.60	Decontamination	
8/27/19	10:30	14.3	5.1	0.0	9.52	Decontamination	



**Table 4-2 Summary of Turbidity Readings  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Time	Turbidity (NTU)				Primary Construction Activity	Comment
		Upstream	Downstream	Above Background	Time-Weighted Average		
8/27/19	13:50	14.5	5.2	0.0	9.41	Decontamination	
8/28/19	6:55	10.8	4.7	0.0	9.31	Decontamination	
8/28/19	14:05	10.5	4.7	0.0	9.21	Decontamination	
8/29/19	6:55	13.9	3.9	0.0	9.12	Decontamination	
8/29/19	13:35	12.5	4.5	0.0	9.03	Sheet pile removal	
8/30/19	7:50	14.1	4.6	0.0	8.94	Sheet pile removal	
8/30/19	13:50	16.0	5.1	0.0	8.86	Sheet pile removal	
9/3/19	7:50	10.7	3.7	0.0	8.81	Sheet pile removal	
9/3/19	14:10	11.8	3.8	0.0	8.77	Sheet pile removal	
9/4/19	7:25	13.0	4.8	0.0	8.72	Backfill	
9/4/19	10:50	10.5	3.0	0.0	8.65	Backfill	
9/4/19	17:05	14.2	6.8	0.0	8.59	Backfill	
9/5/19	7:55	10.2	7.1	0.0	8.52	Backfill	
9/5/19	10:15	11.5	6.6	0.0	8.45	Backfill	
9/5/19	14:55	11.8	7.6	0.0	8.38	Backfill	
9/6/19	8:15	11.2	9.3	0.0	8.31	Backfill	
9/6/19	12:05	10.3	5.8	0.0	8.24	Backfill	
9/9/19	8:55	12.5	9.6	0.0	8.19	Backfill	
9/9/19	14:55	13.6	10.2	0.0	8.14	Backfill	
9/10/19	8:05	11.2	9.4	0.0	5.98	Final grading	
9/10/19	15:45	12.5	13.9	1.4	5.02	Final grading	
9/11/19	8:55	11.1	13.3	2.2	4.54	Final grading	
9/11/19	12:50	12.5	14.5	2.0	4.16	Final grading	
9/12/19	10:35	14.8	19.5	4.7	4.23	Final grading	
9/12/19	14:20	13.9	15.5	1.6	3.93	Final grading	
9/13/19	7:55	10.5	13.5	3.0	3.84	Final grading	
9/13/19	11:45	9.8	13.8	4.0	3.85	Final grading	Final turbidity measurement. No land or water disturbance after this time.

Notes:

Highlighted results exceed applicable criteria of 50 NTU instantaneous and/or 15 NTU average

NTU: Nephelometric Turbidity Units

ft: Feet

MSL: Mean sea level



Table 5-1 Post-Excavation Sampling Results  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey

Grid Column	Grid Row	Pre- Remediation Bottom Elev. (ft MSL)	Post- Remediation Surveyed Bottom Elev. (ft MSL)	Sample Type	Post-Excavation Sample Type	Analysis	Sample Depth (ft BPP)	Sample Elevation (ft MSL)	Lab ID	Sample ID	Sample Date/Time	Total PCBs (mg/kg)	Flag	Total BEHP (mg/kg)	Flag	Comment
AT	34	12.5	9.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.4	9.6 - 9.9	460-181345-12	WP-SB-AT34-I-J-0-050719	5/7/19 13:50	0.013	U	2.4	--	
AT	34	12.5	9.8	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	9.3 - 9.8	460-181345-13	WP-ST-AT34-D-E-0-050719	5/7/19 14:17	0.76	J	8.6	J	Location resampled on 5/10/19 to confirm top of sidewall after survey
AT	34	12.5	12.3	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.8 - 12.3	460-181672-11	WP-ST-AT34-D-E-0-051019	5/10/19 15:03	0.57	J	10	J	
AT	36	12.1	9.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.4 - 9.9	460-181345-14	WP-SB-AT36-I-J-0-050719	5/7/19 14:33	0.015	U	0.57	--	
AT	36	12.1	9.6	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	9.1 - 9.6	460-181345-15	WP-ST-AT36-D-E-0-050719	5/7/19 14:42	0.016	U	0.21	J	Location resampled on 5/10/19 to confirm top of sidewall after survey
AT	36	12.1	12.0	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.5 - 12.0	460-181672-9	WP-ST-AT36-D-E-0-051019	5/10/19 14:47	0.64	J	16	J	
AV	32	12.2	9.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.4 - 9.9	460-181345-10	WP-SB-AV32-I-J-0-050719	5/7/19 13:25	0.011	U	0.94	--	
AV	32	12.2	9.9	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	9.4 - 9.9	460-181345-11	WP-ST-AV32-D-E-0-050719	5/7/19 13:40	0.13	--	1	--	Location resampled on 5/10/19 to confirm top of sidewall after survey
AV	32	12.2	12.3	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.8 - 12.3	460-181672-8	WP-ST-AV32-D-E-0-051019	5/10/19 14:27	0.71	J	3.7	J	
AV	34	12.0	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-181345-2	WP-PB-AV34-A-B-0-050719	5/7/19 10:50	0.012	U	1	--	
AV	37	11.5	9.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.4 - 9.9	460-181345-16	WP-SB-AV37-I-J-0-050719	5/7/19 15:20	0.015	U	0.4	J	
AV	37	11.5	10.0	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	9.5 - 10.0	460-181345-17	WP-ST-AV37-F-G-0-050719	5/7/19 15:45	0.017	U	0.23	J	Location resampled on 5/10/19 to confirm top of sidewall after survey
AV	37	11.5	11.7	Post-Excavation	Sidewall Top	Primary	0.0 - 0.2	11.5 - 11.7	460-181672-13	WP-ST-AV37-F-G-0-051019	5/10/19 16:15	0.7	J	17	J	
AW	43	10.5	9.5	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.0 - 9.5	460-183032-7	WP-SB-AW43-I-J-0-052919	5/29/19 14:25	0.017	U	0.42	J	
AW	43	10.5	10.9	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	10.4 - 10.9	460-183032-8	WP-ST-AW43-H-I-0-052919	5/29/19 14:39	0.12	J	1.6	--	
AW	46	11.8	9.8	Post-Excavation	Sidewall Base	Primary	0.0 - 0.4	9.4 - 9.8	460-183032-10	WP-SB-AW46-I-J-0-052919	5/29/19 15:25	0.012	U	0.16	J	
AW	46	11.8	12.0	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.5 - 12.0	460-183032-12	WP-ST-AW46-D-E-0-052919	5/29/19 15:36	0.32	--	2.6	--	
AW	48	12.5	12.5	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	12.0 - 12.5	460-183224-8	WP-ST-AW48-D-E-0-053119	5/31/19 12:05	0.56	J	6.1	--	
AW	48	12.5	10.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.5 - 10.0	460-183224-9	WP-SB-AW48-I-J-0-053119	5/31/19 12:20	0.012	U	0.022	U	
AY	32	12.2	10.0	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	9.5 - 10.0	460-181345-8	WP-ST-AY32-D-E-0-050719	5/7/19 12:44	0.014	U	2.8	--	Location resampled on 5/10/19 to confirm top of sidewall after survey
AY	32	12.2	10.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.5 - 10.0	460-181345-9	WP-SB-AY32-I-J-0-050719	5/7/19 13:02	0.014	U	0.76	--	
AY	32	12.2	12.0	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.5 - 12.0	460-181672-7	WP-ST-AY-32-D-E-0-051019	5/10/19 14:12	0.024	U	5	--	
AY	34	11.4	10.0	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.5 - 10.0	460-181345-6	WP-PB-AY34-A-B-0-050719	5/7/19 12:10	0.013	U	4.7	J	
AY	37	11.5	10.0	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.5 - 10.0	460-180982-5	WP-PB-AY37-I-J-0-050219	5/2/19 16:07	0.017	U	0.46	J	
AY	38	11.6	10.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.5 - 10.0	460-180982-4	WP-SB-AY38-I-J-0-050219	5/2/19 15:35	0.017	U	0.43	J	
AY	40	11.2	9.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.4 - 9.9	460-181345-1	WP-SB-AY40-I-J-0-050719	5/7/19 10:10	0.016	U	4.9	--	
AY	42	10.4	9.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.4 - 9.9	460-183224-14	WP-SB-AY42-I-J-0-053119	5/31/19 14:29	0.021	U	5.2	--	
AY	42	10.4	10.8	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	10.3 - 10.8	460-183224-15	WP-ST-AY42-H-I-0-053119	5/31/19 14:44	1.4	J	97	J	Removed; sidewall extended to the northwest to sample WP-STC-AY42-H-I-0-060619
AY	42	10.4	10.3	Post-Excavation	Sidewall Stepout	Contingency	0.0 - 0.5	9.9 - 10.3	460-183685-8	WP-STC-AY42-H-I-0-060619	6/6/19 15:10	0.93	J	9.1	J	
AY	43	10.4	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-183224-16	WP-PB-AY43-I-J-0-053119	5/31/19 15:00	0.016	U	0.91	--	
AY	46	11.0	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-183224-19	WP-PB-AY46-I-J-0-053119	5/31/19 11:42	0.011	U	0.022	U	
AY	48	12.5	9.2	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	8.7 - 9.2	460-183224-10	WP-SB-AY48-K-L-0-053119	5/31/19 13:50	0.011	U	0.86	--	
AY	48	12.5	12.4	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.9 - 12.4	460-183224-11	WP-ST-AY48-D-E-0-053119	5/31/19 14:01	0.14	J	0.73	--	
BA	22	13.0	12.7	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	12.2 - 12.7	460-181918-1	WP-ST-BA22-C-D-0-051419	5/14/19 11:59	0.054	UJ	3.2	J	
BA	22	13.0	11.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	10.5 - 11.0	460-181918-2	WP-SB-BA22-G-H-0-051419	5/14/19 12:20	0.012	U	0.1	J	
BA	28	12.5	12.3	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.8 - 12.3	460-181672-6	WP-ST-BA28-D-E-0-051019	5/10/19 12:15	0.019	U	3.9	--	
BA	28	12.5	9.7	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.2 - 9.7	460-181672-12	WP-SB-BA28-I-J-0-051019	5/10/19 15:50	0.47	--	8.7	--	
BB	14	14.0	13.6	Post-Excavation	Sidewall Stepout	Contingency	0.0 - 0.5	13.1 - 13.6	460-183224-5	WP-STC-BB14-A-B-0-053119	5/31/19 11:20	0.058	UJ	5.4	J	
BB	19	14.0	12.2	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	11.7 - 12.2	460-181918-6	WP-SB-BB19-D-E-0-051419	5/14/19 15:11	0.28	J	2	J	
BB	19	14.0	13.5	Post-Excavation	Sidewall Top	Primary	0.0 - 0.2	13.3 - 13.5	460-181918-7	WP-ST-BB19-A-B-0-051419	5/14/19 15:29	0.53	J	5.6	J	
BB	22	12.9	10.5	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.0 - 10.5	460-181918-3	WP-PB-BB22-A-B-0-051419	5/14/19 12:37	0.013	U	0.36	J	
BB	25	12.7	10.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.4 - 10.9	460-181918-5	WP-PB-BB25-C-D-0-051419	5/14/19 13:05	0.015	U	2.4	--	
BB	28	12.4	9.8	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.3 - 9.8	460-181672-1	WP-PB-BB28-A-B-0-051019	5/10/19 10:25	0.012	U	2.6	--	
BB	31	11.8	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-181345-18	WP-PB-BB31-I-J-0-050719	5/7/19 16:14	0.014	U	0.59	--	
BB	37	11.1	10.0	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.5 - 10.0	460-180982-3	WP-PB-BB37-I-J-0-050219	5/2/19 13:14	0.015	U	3	--	
BB	40	10.8	8.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.4 - 8.9	460-180982-1	WP-PB-BB40-K-L-0-050219	5/2/19 12:21	0.011	U	0.15	J	
BB	43	10.0	7.5	Post-Excavation	Bottom	Primary	0.0 - 0.5	7.0 - 7.5	460-183436-5	WP-PB-BB43-M-N-0-060419	6/4/19 11:24	0.011	U	0.18	J	
BB	48	11.6	8.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	8.4 - 8.9	460-183436-3	WP-SB-BB48-K-L-0-060419	6/4/19 10:50	0.011	U	2.3	--	
BB	48	11.6	12.4	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.9 - 12.4	460-183436-4	WP-ST-BB48-E-F-0-060419	6/4/19 11:04	0.17	--	3.4	--	
BE	10	14.0	13.9	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-184877-9	WP-STC-BE10-A-B-0-062119	6/21/19 10:45	0.71	J	3.2	J	
BE	11	14.0	13.9	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	13.4 - 13.9	460-187694-3	WP-ST-BE11-A-B-0-072919	7/29/19 10:10	0.049	UJ	0.12	J	
BE	11	14.0	13.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.5 - 13.0	460-187694-4	WP-SB-BE11-C-D-0-072919	7/29/19 10:20	0.023	U	0.14	J	
BE	13	13.5	13.4	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	12.9 - 13.4	460-187694-1	WP-ST-BE13-A-B-0-072919	7/29/19 9:54	0.35	J	0.32	J	
BE	13	13.5	12.5	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.0 - 12.5	460-187694-2	WP-SB-BE13-C-D-0-072919	7/29/19 9:55	0.02	U	0.038	U	



Table 5-1 Post-Excavation Sampling Results  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey

Grid Column	Grid Row	Pre- Remediation Bottom Elev. (ft MSL)	Post- Remediation Surveyed Bottom Elev. (ft MSL)	Sample Type	Post-Excavation Sample Type	Analysis	Sample Depth (ft BPP)	Sample Elevation (ft MSL)	Lab ID	Sample ID	Sample Date/Time	Total PCBs (mg/kg)	Flag	Total BEHP (mg/kg)	Flag	Comment
BE	14	14.0	13.2	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-183224-3	WP-STC-BE14-A-B-0-053119	5/31/19 10:40	0.023	U	1	--	
BE	16	14.0	13.8	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	13.4 - 13.8	460-185168-16	WP-ST-BE16-A-B-0-062519	6/25/19 16:15	5.2	J	17	J	Removed; sidewall extended to the west to sample WP-STC-BE16-A-B-0-062719
BE	16	14.0	11.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.3	10.7 - 11.0	460-185168-17	WP-SB-BE16-G-H-0-062519	6/25/19 16:28	0.011	U	0.1	J	
BE	16	14.0	13.8	Post-Excavation	Sidewall Stepout	Contingency	0.0 - 0.5	13.3 - 13.8	460-185378-2	WP-STC-BE16-A-B-0-062719	6/27/19 11:30	0.21	--	2.3	--	
BE	18	14.0	13.1	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	12.6 - 13.1	460-182109-3	WP-ST-BE18-C-D-0-051619	5/16/19 13:43	0.019	U	0.28	J	
BE	18	14.0	12.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.4 - 12.9	460-182109-5	WP-SB-BE18-C-D-0-051619	5/16/19 14:00	0.042	UJ	0.59	J	
BE	19	14.0	12.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	12.4 - 12.9	460-182109-1	WP-PB-BE19-A-B-0-051619	5/16/19 12:23	0.017	U	0.084	J	
BE	22	12.8	11.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	11.4 - 11.9	460-182109-2	WP-PB-BE22-A-B-0-051619	5/16/19 13:08	0.013	U	0.7	--	
BE	28	12.0	9.7	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.2 - 9.7	460-181672-5	WP-PB-BE28-A-B-0-051019	5/10/19 11:12	0.013	U	2.2	--	
BE	31	11.4	9.0	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.5 - 9.0	460-186189-1	WP-PB-BE31-A-B-0-070919	7/9/19 12:15	0.17	--	5.5	--	
BE	34	11.6	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-182769-3	WP-PB-BE34-A-B-0-052419	5/24/19 10:03	0.013	U	1.5	--	
BE	37	11.0	9.0	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.5 - 9.0	460-181672-3	WP-PB-BE37-K-L-0-051019	5/10/19 10:49	0.013	U	7.1	--	
BE	40	10.5	8.5	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.0 - 8.5	460-183436-7	WP-PB-BE40-K-L-0-060419	6/4/19 12:10	0.013	U	1.3	--	
BE	43	10.0	8.8	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.3 - 8.8	460-183436-10	WP-PB-BE43-A-B-0-060419	6/4/19 12:35	0.011	U	0.42	--	
BE	46	10.5	8.7	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.2 - 8.7	460-183436-11	WP-PB-BE46-K-L-0-060419	6/4/19 13:10	0.011	U	3.5	--	
BE	48	11.5	9.2	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	8.7 - 9.2	460-183436-1	WP-SB-BE48-K-L-0-060419	6/4/19 10:20	0.016	U	1.2	--	
BE	48	11.5	12.3	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.8 - 12.3	460-183436-2	WP-ST-BE48-F-G-0-060419	6/4/19 10:35	0.018	U	1.2	--	
BG	10	14.5	13.8	Delineation	N/A	N/A	0.0 - 0.5	14.0 - 14.5	460-185168-12	WP-STC-BG10-A-B-0-062519	6/25/19 14:40	0.15	--	1.2	--	
BG	10	14.5	14.4	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	13.9 - 14.4	460-187585-17	WP-ST-BG10-A-B-0-072619	7/26/19 13:40	0.59	J	40	J	Removed; sidewall extended to the northwest to sample WP-STC-BG10-A-B-0-073119
BG	10	14.5	13.4	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.9 - 13.4	460-187585-18	WP-SB-BG10-C-D-0-072619	7/26/19 13:50	0.36	--	0.051	U	
BG	10	14.5	14.3	Post-Excavation	Sidewall Stepout	Contingency	0.0 - 0.5	13.8 - 14.3	460-187878-3	WP-STC-BG10-A-B-0-073119	7/31/19 10:15	--	--	0.093	UJ	
BH	1	15.5	15.5	Delineation	N/A	N/A	0.0 - 0.5	15.0 - 15.5	460-185770-8	WP-STC-BH1-A-B-0-070219	7/2/19 15:08	0.015	U	0.028	U	
BH	1	15.5	15.5	Delineation	N/A	N/A	1.0 - 1.5	14.0 - 14.5	460-185770-9	WP-STC-BH1-C-D-0-070219	7/2/19 15:17	0.016	U	0.031	U	
BH	4	14.5	14.5	Delineation	N/A	N/A	0.0 - 0.5	14.0 - 14.5	460-185770-10	WP-STC-BH4-A-B-0-070219	7/2/19 15:25	0.25	--	0.044	U	
BH	4	14.5	14.5	Delineation	N/A	N/A	1.0 - 1.5	13.0 - 13.5	460-185770-11	WP-STC-BH4-C-D-0-070219	7/2/19 15:45	0.013	U	0.025	U	
BH	7	14.5	14.5	Delineation	N/A	N/A	0.0 - 0.5	14.0 - 14.5	460-184877-8	WP-STC-BH7-A-B-0-062119	6/21/19 10:25	0.73	--	4.2	--	
BH	7	14.5	14.5	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	14.0 - 14.5	460-187585-15	WP-ST-BH7-A-B-0-072619	7/26/19 13:10	0.17	J	0.059	UJ	
BH	7	14.5	13.4	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.9 - 13.4	460-187585-16	WP-SB-BH7-C-D-0-072619	7/26/19 13:20	0.016	U	0.031	U	
BH	8	14.0	13.2	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-184877-5	WP-STC-BH8-A-B-0-062119	6/21/19 9:55	0.58	J	0.96	J	
BH	8	14.0	14.3	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	13.8 - 14.3	460-187585-13	WP-ST-BH8-A-B-0-072619	7/26/19 12:40	0.23	--	0.039	U	
BH	8	14.0	13.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.5 - 13.0	460-187585-14	WP-SB-BH8-C-D-0-072619	7/26/19 12:50	0.022	U	0.042	U	
BH	10	14.0	13.8	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-184793-6	WP-STC-BH10-A-B-0-062019	6/20/19 14:20	10	--	1200	--	Removed; sidewall extended to the north to sample WP-ST-BH8-A-B-0-072619
BH	10	14.0	13.8	Delineation	N/A	N/A	1.0 - 1.5	12.5 - 13.0	460-184793-7	WP-STC-BH10-C-D-0-062019	6/20/19 14:30	0.013	U	1.9	--	
BH	10	14.0	12.7	Post-Excavation	Bottom	Primary	0.0 - 0.5	12.2 - 12.7	460-187585-19	WP-PB-BH10-C-D-0-072619	7/26/19 14:00	0.16	--	1.3	--	
BH	11	14.0	13.7	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-184793-4	WP-STC-BH11-A-B-0-062019	6/20/19 13:55	3.6	--	1400	--	Removed; sidewall extended to the north to sample WP-ST-BH8-A-B-0-072619
BH	11	14.0	13.7	Delineation	N/A	N/A	1.0 - 1.5	12.5 - 13.0	460-184793-5	WP-STC-BH11-C-D-0-062019	6/20/19 14:05	0.11	--	7.3	--	
BH	13	14.0	14.0	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-183685-11	WP-STC-BH13-A-B-0-060619	6/6/19 17:15	1.1	J	0.42	J	Removed; sidewall extended to the north to sample WP-ST-BH8-A-B-0-072619
BH	13	14.0	10.2	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.7 - 10.2	460-187694-5	WP-PB-BH13-C-D-0-072919	7/29/19 10:40	0.011	U	0.14	J	
BH	14	14.0	13.7	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-183103-4	WP-STC-BH14-A-B-0-053019	5/30/19 11:55	1.7	J	1.5	--	Removed; sidewall extended to the north to sample WP-ST-BH8-A-B-0-072619
BH	14	14.0	13.7	Delineation	N/A	N/A	1.0 - 1.3	12.7 - 13.0	460-183103-6	WP-STC-BH14-C-D-0-053019	5/30/19 13:49	5.2	--	16	J	Removed; sidewall extended to sample WP-SB-BH8-C-D-0-072619
BH	14	14.0	13.7	Delineation	N/A	N/A	3.0 - 3.4	10.6 - 11.0	460-183685-10	WP-STC-BH14-G-H-0-060619	6/6/19 16:40	0.011	U	0.11	J	
BH	16	14.0	10.6	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.1 - 10.6	460-185168-1	WP-PB-BH16-G-H-0-062519	6/25/19 10:05	0.012	U	2.4	--	
BH	17	14.0	13.5	Delineation	N/A	N/A	2.5 - 3.0	11.0 - 11.5	460-183752-6	WP-STC-BH17-F-G-0-060719	6/7/19 11:10	0.015	U	0.68	J	
BH	19	14.0	13.7	Post-Excavation	Sidewall Top	Primary	0.0 - 0.4	13.3 - 13.7	460-182109-8	WP-ST-BH19-A-B-0-051619	5/16/19 15:49	1.4	J	0.48	J	Removed; sidewall extended to the north to sample WP-ST-BH8-A-B-0-072619
BH	19	14.0	13.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.5 - 13.0	460-182109-9	WP-SB-BH19-C-D-0-051619	5/16/19 16:03	2	J	130	J	Removed; sidewall extended to the north to sample WP-SB-BH8-C-D-0-072619
BH	19	14.0	13.5	Delineation	N/A	N/A	0.0 - 0.2	13.9 - 14.0	460-182489-5	WP-STC10N-BH19-A-B-0-052119	5/21/19 14:46	2.8	J	54	J	Removed; sidewall extended to the north to sample WP-ST-BH8-A-B-0-072619
BH	19	14.0	13.5	Delineation	N/A	N/A	0.0 - 0.4	13.6 - 14.0	460-182714-3	WP-STC15N-BH19-A-B-0-052319	5/23/19 11:15	6.0	J	1.5	J	Removed; sidewall extended to the north to sample WP-ST-BH8-A-B-0-072619
BH	19	14.0	10.7	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.2 - 10.7	460-184877-1	WP-PB-BH19-G-H-0-062119	6/21/19 8:55	0.18	J	2.6	--	
BH	22	12.8	11.0	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.5 - 11.0	460-182109-6	WP-PB-BH22-A-B-0-051619	5/16/19 15:07	0.013	U	2.4	--	
BH	25	12.6	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-182109-7	WP-PB-BH25-A-B-0-051619	5/16/19 15:35	0.012	U	0.83	J	
BH	28	12.0	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-182489-3	WP-PB-BH28-A-B-0-052119	5/21/19 14:15	0.29	J	20	--	
BH	31	11.5	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-182489-4	WP-PB-BH31-A-B-0-052119	5/21/19 14:35	0.84	J	24	--	Removed; bottom extended to contingency sample WP-PBC-BH31-C-D-0-052319
BH	31	11.5	9.8	Post-Excavation	Below Bottom	Contingency	1.0 - 1.5	8.3 - 8.8	460-182714-6	WP-PBC-BH31-C-D-0-052319	5/23/19 15:00	0.011	U	0.14	J	
BH	34	10.9	9.0	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.5 - 9.0	460-182489-1	WP-PB-BH34-K-L-0-052119	5/21/19 12:15	0.16	J	3.4	J	



Table 5-1 Post-Excavation Sampling Results  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey

Grid Column	Grid Row	Pre- Remediation	Post- Remediation	Sample Type	Post-Excavation Sample Type	Analysis	Sample		Sample		Lab ID	Sample ID	Sample Date/Time	Total	Flag	Total	Flag	Comment		
		Bottom Elev. (ft MSL)	Bottom Elev. (ft MSL)				Depth (ft BPB)	Elevation (ft MSL)	PCBs (mg/kg)	BEHP (mg/kg)										
BH	37	11.0	9.0	Post-Excavation	Bottom	Primary	0.0	-	0.5	8.5	-	9.0	460-183224-12	WP-PB-BH37-K-L-0-053119	5/31/19 14:12	0.6	J	11	--	
BH	40	10.5	8.9	Post-Excavation	Bottom	Primary	0.0	-	0.5	8.4	-	8.9	460-183436-15	WP-PB-BH40-K-L-0-060419	6/4/19 14:10	0.012	U	1.3	--	
BH	43	10.0	8.9	Post-Excavation	Bottom	Primary	0.0	-	0.5	8.4	-	8.9	460-183436-16	WP-PB-BH43-K-L-0-060419	6/4/19 14:25	0.013	U	1.7	--	
BH	46	10.5	8.8	Post-Excavation	Bottom	Primary	0.0	-	0.5	8.3	-	8.8	460-183436-18	WP-PB-BH46-K-L-0-060419	6/4/19 14:39	0.012	U	1.9	--	
BH	48	10.5	9.0	Post-Excavation	Sidewall Base	Primary	0.0	-	0.5	8.5	-	9.0	460-183436-13	WP-SB-BH48-K-L-0-060419	6/4/19 13:34	0.011	U	0.09	J	
BH	48	10.5	11.5	Post-Excavation	Sidewall Top	Primary	0.0	-	0.5	11.0	-	11.5	460-183436-14	WP-ST-BH48-H-I-0-060419	6/4/19 13:50	0.013	U	1.1	--	
BJ	6	13.5	13.2	Delineation	N/A	N/A	0.0	-	0.5	13.0	-	13.5	460-185770-3	WP-STC-BJ6-A-B-0-070219	7/2/19 11:05	0.93	J	31	J	Removed; sidewall extended to the north to sample WP-STC-BJ6-A-B-0-073119
BJ	6	13.5	13.2	Delineation	N/A	N/A	1.0	-	1.5	12.0	-	12.5	460-185770-4	WP-STC-BJ6-C-D-0-070219	7/2/19 11:17	0.014	U	0.14	J	
BJ	6	14.5	14.5	Post-Excavation	Sidewall Top	Primary	0.0	-	0.5	14.0	-	14.5	460-187585-8	WP-ST-BJ6-A-B-0-072619	7/26/19 11:10	1.1	--	17	--	Removed; sidewall extended to the north to sample WP-STC-BJ6-A-B-0-073119
BJ	6	14.5	13.1	Post-Excavation	Sidewall Bottom	Primary	0.0	-	0.5	12.6	-	13.1	460-187585-9	WP-SB-BJ6-C-D-0-072619	7/26/19 11:20	3.5	--	140	--	Removed; sidewall extended to the north to sample WP-STC-BJ6-A-B-0-073119
BJ	6	14.5	14.1	Post-Excavation	Sidewall Stepout	Contingency	0.0	-	0.5	13.6	-	14.1	460-187878-2	WP-STC-BJ6-A-B-0-073119	7/31/19 10:05	0.49	--	1.8	--	
BK	1	13.5	13.5	Delineation	N/A	N/A	0.0	-	0.5	13.0	-	13.5	460-185770-14	WP-STC-BK1-A-B-0-070219	7/2/19 16:10	0.028	U	0.054	U	
BK	1	13.5	13.5	Delineation	N/A	N/A	1.0	-	1.5	12.0	-	12.5	460-185770-15	WP-STC-BK1-C-D-0-070219	7/2/19 16:25	0.029	U	0.054	U	
BK	4	13.5	13.3	Delineation	N/A	N/A	0.0	-	0.5	13.0	-	13.5	460-185770-12	WP-STC-BK4-A-B-0-070219	7/2/19 15:53	0.026	U	0.05	U	
BK	4	13.5	13.3	Delineation	N/A	N/A	1.0	-	1.5	12.0	-	12.5	460-185770-13	WP-STC-BK4-C-D-070219	7/2/19 15:58	0.017	U	0.031	U	
BK	6	15.0	13.2	Delineation	N/A	N/A	0.0	-	0.5	14.5	-	15.0	460-185770-1	WP-STC-BK6-A-B-0-070219	7/2/19 10:48	0.55	--	1.7	--	
BK	6	15.0	13.2	Delineation	N/A	N/A	1.0	-	1.5	13.5	-	14.0	460-185770-2	WP-STC-BK6-C-D-0-070219	7/2/19 10:55	0.012	U	0.12	J	
BK	6	15.0	14.8	Post-Excavation	Sidewall Top	Primary	0.0	-	0.5	14.3	-	14.8	460-187585-6	WP-ST-BK6-A-B-0-072619	7/26/19 10:40	0.012	U	0.00023	U	
BK	6	15.0	13.1	Post-Excavation	Sidewall Base	Primary	0.0	-	0.5	12.6	-	13.1	460-187585-7	WP-SB-BK6-C-D-0-072619	7/26/19 11:00	0.016	U	0.031	U	
BK	7	14.0	13.5	Delineation	N/A	N/A	0.0	-	0.5	13.5	-	14.0	460-185168-7	WP-STC-BK7-A-B-0-062519	6/25/19 13:45	3.4	--	41	--	Removed; sidewall extended to the north to sample location WP-ST-BK6-A-B-0-072619
BK	7	14.0	13.5	Delineation	N/A	N/A	1.0	-	1.5	12.5	-	13.0	460-185168-8	WP-STC-BK7-C-D-0-062519	6/25/19 14:00	0.8	--	0.013	U	
BK	7	14.0	10.3	Post-Excavation	Bottom	Primary	0.0	-	0.5	9.8	-	10.3	460-187585-10	WP-PB-BK7-C-D-0-072619	7/26/19 11:30	0.011	U	0.021	U	
BK	8	14.0	13.2	Delineation	N/A	N/A	0.0	-	0.5	13.5	-	14.0	460-185168-5	WP-STC-BK8-A-B-0-062519	6/25/19 12:10	2.6	--	35	--	Removed; sidewall extended to the north to sample location WP-ST-BK6-A-B-0-072619
BK	8	14.0	13.2	Delineation	N/A	N/A	1.0	-	1.5	12.5	-	13.0	460-185168-6	WP-STC-BK8-C-D-0-062519	6/25/19 12:35	0.019	U	0.23	J	
BK	10	14.0	14.4	Delineation	N/A	N/A	0.0	-	0.5	13.5	-	14.0	460-184793-8	WP-STC-BK10-A-B-0-062019	6/20/19 14:45	2.3	--	210	--	Removed; sidewall extended to the north to sample location WP-ST-BK6-A-B-0-072619
BK	10	14.0	14.4	Delineation	N/A	N/A	1.0	-	1.5	12.5	-	13.0	460-184793-9	WP-STC-BK10-C-D-0-062019	6/20/19 15:00	0.42	--	7.7	--	
BK	10	14.0	11.0	Post-Excavation	Bottom	Primary	0.0	-	0.5	10.5	-	11.0	460-187389-9	WP-PB-BK10-C-D-0-072419	7/24/19 14:45	0.36	--	20	--	
BK	13	14.0	10.9	Post-Excavation	Bottom	Primary	0.0	-	0.3	10.6	-	10.9	460-187585-5	WP-PB-BK13-C-D-0-072619	7/26/19 10:15	2	--	24	--	Removed; bottom extended to contingency sample WP-PBC-BK13-E-F-0-073119 depth
BK	13	14.0	10.8	Post-Excavation	Below Bottom	Contingency	1.0	-	1.4	9.5	-	9.8	460-187878-1	WP-PBC-BK13-E-F-0-073119	7/31/19 9:50	0.01	U	1.5	--	
BK	14	14.0	14.3	Delineation	N/A	N/A	0.0	-	0.5	13.5	-	14.0	460-183685-14	WP-STC-BK14-A-B-0-060619	6/6/19 17:55	0.63	--	0.4	J	
BK	15	14.0	13.6	Delineation	N/A	N/A	0.0	-	0.5	13.5	-	14.0	460-183103-3	WP-STC-BK15-A-B-0-053019	5/30/19 11:43	5.6	--	90	--	Removed; sidewall extended to the north to sample location WP-ST-BK6-A-B-0-072619
BK	15	14.0	13.6	Delineation	N/A	N/A	2.5	-	3.0	11.0	-	11.5	460-183752-7	WP-STC-BK15-F-G-0-060719	6/7/19 12:10	0.014	U	0.49	--	
BK	16	14.0	10.5	Post-Excavation	Bottom	Primary	0.0	-	0.5	10.0	-	10.5	460-186929-7	WP-PB-BK16-C-D-0-071819	7/18/19 14:25	0.63	--	0.099	J	
BK	18	14.0	13.0	Delineation	N/A	N/A	2.5	-	3.0	11.0	-	11.5	460-183752-3	WP-STC-BK18-F-G-0-060719	6/7/19 10:45	0.11	--	0.44	J	
BK	19	14.0	10.6	Post-Excavation	Bottom	Primary	0.0	-	0.5	10.1	-	10.6	460-184877-4	WP-PB-BK19-G-H-0-062119	6/21/19 9:30	0.012	U	0.7	--	
BK	20	14.0	13.5	Post-Excavation	Sidewall Top	Primary	0.0	-	0.5	13.0	-	13.5	460-182714-1	WP-ST-BK20-A-B-0-052319	5/23/19 10:44	2.1	--	6.9	--	Removed; sidewall extended to the north to sample location WP-ST-BK6-A-B-0-072619
BK	20	14.0	13.0	Post-Excavation	Sidewall Base	Primary	0.0	-	0.5	12.5	-	13.0	460-182714-2	WP-SB-BK20-C-D-0-0521319	5/23/19 11:00	4.4	J	17	--	Removed; sidewall extended to the north to sample location WP-SB-BK6-C-D-0-072619
BK	22	14.0	11.5	Post-Excavation	Bottom	Primary	0.0	-	0.5	11.0	-	11.5	460-182769-7	WP-PB-BK22-A-B-0-052419	5/24/19 11:05	0.35	J	4.7	--	
BK	25	12.5	10.7	Post-Excavation	Bottom	Primary	0.0	-	0.5	10.2	-	10.7	460-182714-12	WP-PB-BK25-A-B-0-052319	5/23/19 17:50	0.4	--	10	--	
BK	28	12.0	10.5	Post-Excavation	Bottom	Primary	0.0	-	0.5	10.0	-	10.5	460-182714-10	WP-PB-BK28-A-B-0-052319	5/23/19 17:30	1	--	25	--	Removed; bottom extended to contingency sample WP-PBC-BK28-C-D-0-022319
BK	28	12.0	10.5	Post-Excavation	Below Bottom	Contingency	1.0	-	1.2	9.3	-	9.5	460-182714-11	WP-PBC-BK28-C-D-0-022319	5/23/19 17:37	--	--	0.57	--	
BK	31	11.3	9.5	Post-Excavation	Bottom	Primary	0.0	-	0.5	9.0	-	9.5	460-183224-2	WP-PB-BK31-A-B-0-053119	5/31/19 10:19	0.43	--	11	--	
BK	34	10.9	8.0	Post-Excavation	Bottom	Primary	0.0	-	0.5	7.5										



Table 5-1 Post-Excavation Sampling Results  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey

Grid Column	Grid Row	Pre- Remediation Bottom Elev. (ft MSL)	Post- Remediation Surveyed Bottom Elev. (ft MSL)	Sample Type	Post-Excavation Sample Type	Analysis	Sample Depth (ft BPB)	Sample Elevation (ft MSL)	Lab ID	Sample ID	Sample Date/Time	Total PCBs (mg/kg)	Flag	Total BEHP (mg/kg)	Flag	Comment
BL	7	15.5	13.5	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	13.0 - 13.5	460-187585-2	WP-SB-BL7-C-D-0-072619	7/26/19 9:40	0.011	U	0.021	U	
BL	10	15.0	14.9	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	14.5 - 14.9	460-187389-12	WP-ST-BL10-A-B-0-072419	7/24/19 15:15	0.15	--	0.16	J	
BL	10	15.0	13.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	13.4 - 13.9	460-187389-13	WP-SB-BL10-C-D-0-072419	7/24/19 15:20	18	--	760	--	Removed; sidewall extended to the east to sample location WP-STC-BL10-A-B-0-072619
BL	10	15.0	15.0	Post-Excavation	Sidewall Stepout	Contingency	0.0 - 0.5	14.5 - 15.0	460-187585-11	WP-STC-BL10-A-B-0-072619	7/26/19 12:25	0.014	U	0.027	U	
BL	46	9.6	7.6	Post-Excavation	Bottom	Primary	0.0 - 0.5	7.1 - 7.6	460-183685-4	WP-PB-BL46-M-N-0-060619	6/6/19 13:05	0.011	U	0.021	U	Bottom sample from grid node BK46 relocated to BL46 to deepest portion of excavation in this area.
BM	10	14.5	14.8	Delineation	N/A	N/A	0.0 - 0.5	14.0 - 14.5	460-185168-14	WP-STC-BM10-A-B-0-062519	6/25/19 15:17	0.91	--	1.8	--	
BN	1	16.5	17.9	Delineation	N/A	N/A	0.0 - 0.5	16.0 - 16.5	460-185770-18	WP-STC-BN1-A-B-0-070219	7/2/19 16:45	1.4	--	0.95	--	Location on adjacent Crown property, to be addressed separately pending permit modification
BN	1	16.5	17.9	Delineation	N/A	N/A	1.0 - 1.5	15.0 - 15.5	460-185770-19	WP-STC-BN1-C-D-0-070219	7/2/19 16:55	0.01	U	0.02	U	
BN	1	16.5	18.2	Delineation	N/A	N/A	0.0 - 0.5	16.0 - 16.5	460-186929-3	WP-BN1-5E-A-B-0-071819	7/18/19 11:45	14	--	1.5	--	Location on adjacent Crown property, to be addressed separately pending permit modification
BN	1	16.5	17.6	Delineation	N/A	N/A	0.0 - 0.5	16.0 - 16.5	460-186929-4	WP-BN1-5S-A-B-0-071819	7/18/19 11:50	0.41	--	0.12	J	
BN	1	16.5	18.3	Delineation	N/A	N/A	0.0 - 0.5	16.0 - 16.5	460-186929-5	WP-BN1-5N-A-B-0-071819	7/18/19 12:20	0.13	--	0.045	J	
BN	1	16.5	17.9	Delineation	N/A	N/A	0.0 - 0.5	16.0 - 16.5	460-186929-6	WP-BN1-5W-A-B-0-071819	7/18/19 12:35	1.1	--	12	--	Location on adjacent Crown property, to be addressed separately pending permit modification
BN	1	16.5	18.2	Delineation	N/A	N/A	1.0 - 1.5	15.0 - 15.5	460-187462-1	WP-BN1-5E-C-D-0-072519	7/25/19 13:50	0.01	U	0.019	U	
BN	1	16.5	18.1	Delineation	N/A	N/A	0.0 - 0.5	16.0 - 16.5	460-187462-2	WP-BN1-10N-A-B-0-072519	7/25/19 14:10	0.01	U	0.041	J	
BN	1	16.5	17.6	Delineation	N/A	N/A	0.0 - 0.5	16.0 - 16.5	460-187462-3	WP-BN1-10S-A-B-0-072519	7/25/19 14:15	0.011	U	0.087	J	
BN	1	16.5	16.1	Delineation	N/A	N/A	0.0 - 0.5	16.0 - 16.5	460-187462-4	WP-BN1-10E-A-B-0-072519	7/25/19 14:25	0.29	--	0.36	J	
BN	4	16.0	16.0	Delineation	N/A	N/A	0.0 - 0.5	15.5 - 16.0	460-185770-16	WP-STC-BN4-A-B-0-070219	7/2/19 16:31	0.12	--	0.1	J	
BN	4	16.0	16.0	Delineation	N/A	N/A	1.0 - 1.5	14.5 - 15.0	460-185770-17	WP-STC-BN4-C-D-0-070219	7/2/19 16:40	0.011	U	0.02	U	
BN	11	14.5	14.9	Delineation	N/A	N/A	0.0 - 0.5	14.0 - 14.5	460-184793-1	WP-STC-BN11-A-B-0-062019	6/20/19 13:15	0.27	--	0.64	--	
BN	11	15.0	15.0	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	14.5 - 15.0	460-187389-2	WP-ST-BN11-A-B-0-072419	7/24/19 10:50	0.082	J	0.044	J	
BN	11	15.0	13.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	13.4 - 13.9	460-187389-3	WP-SB-BN11-C-D-0-072419	7/24/19 11:10	0.11	--	0.32	J	
BN	13	14.5	14.5	Delineation	N/A	N/A	0.0 - 0.5	14.0 - 14.5	460-184793-2	WP-STC-BN13-A-B-0-062019	6/20/19 13:30	3.4	--	0.84	--	Removed; sidewall extended to the north to sample location WP-ST-BN11-A-B-0-072419
BN	13	14.5	14.5	Delineation	N/A	N/A	1.0 - 1.5	13.0 - 13.5	460-184793-3	WP-STC-BN13-C-D-0-062019	6/20/19 13:45	0.012	U	0.023	U	
BN	13	14.5	13.4	Post-Excavation	Bottom	Primary	0.0 - 0.5	12.9 - 13.4	460-187175-3	WP-PB-BN13-C-D-0-072219	7/22/19 15:00	1.8	--	5.1	--	Removed; sidewall extended to the north to sample location WP-ST-BN11-A-B-0-072419
BN	13	14.5	13.3	Post-Excavation	Below Bottom	Contingency	1.0 - 1.5	11.8 - 12.3	460-187389-8	WP-PBC-BN13-E-F-0-072419	7/24/19 14:15	0.013	U	0.16	J	
BN	14	14.5	14.3	Delineation	N/A	N/A	0.0 - 0.5	14.0 - 14.5	460-183685-12	WP-STC-BN14-A-B-0-060619	6/6/19 17:35	2.5	--	4.9	--	Removed; sidewall extended to the north to sample location WP-ST-BN11-A-B-0-072419
BN	14	14.5	14.3	Delineation	N/A	N/A	1.0 - 1.4	13.2 - 13.5	460-183685-13	WP-STC-BN14-C-D-0-060619	6/6/19 17:40	1.1	--	--	--	Removed; sidewall extended to the north to sample location WP-ST-BN11-A-B-0-072419
BN	15	14.5	14.6	Delineation	N/A	N/A	0.0 - 0.8	13.7 - 14.5	460-183103-1	WP-STC-BN15-A-B-0-053019	5/30/19 11:15	2	J	15	--	Removed; sidewall extended to the north to sample location WP-ST-BN11-A-B-0-072419
BN	15	14.5	14.6	Delineation	N/A	N/A	1.0 - 1.4	13.1 - 13.5	460-183103-8	WP-STC-BN15-C-D-0-053019	5/30/19 14:17	1.4	--	77	--	Removed; sidewall extended to the north to sample location WP-ST-BN11-A-B-0-072419
BN	15	14.5	14.6	Delineation	N/A	N/A	2.5 - 3.0	11.5 - 12.0	460-183752-8	WP-STC-BN15-F-G-0-060719	6/7/19 12:35	0.015	U	0.16	J	
BN	16	14.5	10.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.4 - 10.9	460-186929-1	WP-PB-BN16-C-D-0-071819	7/18/19 11:15	0.91	--	13	J	
BN	18	13.5	13.5	Delineation	N/A	N/A	2.5 - 3.0	10.5 - 11.0	460-183752-1	WP-STC-BN18-F-G-0-060719	6/7/19 10:05	0.21	--	2.1	J	
BN	19	14.0	10.8	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.3 - 10.8	460-184877-3	WP-PB-BN19-G-H-0-062119	6/21/19 9:20	0.014	U	0.21	J	
BN	21	14.0	13.5	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	13.0 - 13.5	460-182714-4	WP-ST-BN21-A-B-0-052319	5/23/19 11:46	1.1	--	10	--	Removed; sidewall extended to the north to sample location WP-ST-BN11-A-B-0-072419
BN	21	14.0	11.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	11.4 - 11.9	460-182714-5	WP-SB-BN21-E-F-0-052319	5/23/19 14:45	1.3	--	21	--	Removed; sidewall extended to the north to sample location WP-ST-BN11-A-B-0-072419
BN	22	14.0	11.6	Post-Excavation	Bottom	Primary	0.0 - 0.5	11.1 - 11.6	460-182769-4	WP-PB-BN22-A-B-0-052419	5/24/19 10:24	1.7	J	23	--	Removed; bottom extended to contingency sample WP-PBC-BN22-C-D-0-060619 depth
BN	22	14.0	11.5	Post-Excavation	Below Bottom	Contingency	1.0 - 1.5	10.0 - 10.5	460-183685-9	WP-PBC-BN22-C-D-0-060619	6/6/19 16:25	0.011	U	0.022	U	No recovery from 1.0-1.5 ft interval on 5/24/19. Contingency sample taken 3 ft horizontally SE on 6/6/19.
BN	25	14.0	10.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.4 - 10.9	460-182769-5	WP-PB-BN25-A-B-0-052419	5/24/19 10:40	0.023	U	0.56	J	
BN	28	12.1	9.6	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.1 - 9.6	460-183224-1	WP-PB-BN28-A-B-0-053119	5/31/19 10:00	1.4	J	28	--	Removed; bottom extended to contingency sample WP-PBC-BN28-C-D-0-060619 depth
BN	28	12.1	9.5	Post-Excavation	Below Bottom	Contingency	1.0 - 1.3	8.2 - 8.5	460-183685-7	WP-PBC-BN28-C-D-0-060619	6/6/19 14:45	0.011	U	0.72	--	
BN	31	11.2	5.8	Post-Excavation	Bottom	Primary	0.0 - 0.5	5.3 - 5.8	460-186501-3	WP-PB-BN31-A-B-0-071219	7/12/19 13:12	0.011	U	1.2	--	
BN	34	10.9	8.6	Post-Excavation	Bottom	Primary	0.0 - 0.4	8.2 - 8.6	460-186267-1	WP-PB-BN34-K-L-0-071019	7/10/19 12:40	0.42	--	27	--	Removed; bottom extended to contingency sample WP-PBC-BN34-C-D-0-071219 depth
BN	34	10.9	8.6	Post-Excavation	Below Bottom	Contingency	1.0 - 1.5	7.1 - 7.6	460-186501-1	WP-PBC-BN34-C-D-0-071219	7/12/19 12:47	0.011	U	0.21	J	
BN	37	10.2	8.3	Post-Excavation	Bottom	Primary	0.0 - 0.3	8.0 - 8.3	460-184282-4	WP-PB-BN37-M-N-0-061319	6/13/19 15:25	0.57	--	3	--	
BN	40	9.5	7.8	Post-Excavation	Bottom	Primary	0.0 - 0.5	7.3 - 7.8	460-184282-1	WP-PB-BN40-M-N-0-061319	6/13/19 14:25	0.11	--	0.96	--	
BN	43	9.7	8.8	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.3 - 8.8	460-184053-7	WP-PB-BN43-K-L-0-061119	6/11/19 12:10	1.2	J	8.9	J	Removed; bottom extended to contingency sample WP-PBC-BN43-C-D-0-061119 depth
BN	43	9.7	8.8	Post-Excavation	Below Bottom	Contingency	1.0 - 1.5	7.3 - 7.8	460-184053-8	WP-PBC-BN43-C-D-0-061119	6/11/19 12:20	0.012	U	--	--	
BN	46	10.3	8.7	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.2 - 8.7	460-184053-1	WP-PB-BN46-K-L-0-061119	6/11/19 9:40	0.69	--	25	--	Removed; bottom extended to contingency sample WP-PBC-BN46-C-D-0-061119 depth
BN	46	10.3	8.7	Post-Excavation	Below Bottom	Contingency	1.0 - 1.5	7.2 - 7.7	460-184053-2	WP-PBC-BN46-C-D-0-061119	6/11/19 9:45	--	--	1.3	--	
BN	48	11.6	8.7	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	8.2 - 8.7	460-184053-3	WP-SB-BN48-K-L-0-061119	6/11/19 10:10	0.017	U	0.25	J	
BN	48	11.6	11.3	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	10.8 - 11.3	460-184053-4	WP-ST-BN48-E-F-0-061119	6/11/19 10:30	1.1	--	45	--	Removed; sidewall extended to the south to sample location WP-STC-BN48-E-F-0-061819
BN	48	11.6	12.3	Post-Excavation	Sidewall Stepout	Contingency	0.0 - 0.5	11.8 - 12.3	460-184621-1	WP-STC-BN48-E-F-0-061819	6/18/19 11:40	0.15	--	4.3	--	
BO	10	14.5	14.5	Delineation	N/A	N/A	0.0 - 0.5	14.0 - 14.5	460-186189-7	WP-STC-BO10-A-B-0-070919	7/9/19 16:00	0.26	--	5.4	--	
BO	13	14.0	14.5	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-185168-9	WP-STC-BO13-A-B-0-062519	6/25/19 14:10	7.3	--	38	--	Removed; sidewall extended to the east to sample location WP-ST-BP13-A-B-0-072419



Table 5-1 Post-Excavation Sampling Results  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey

Grid Column	Grid Row	Pre-Remediation Bottom Elev. (ft MSL)	Post-Remediation Surveyed Bottom Elev. (ft MSL)	Sample Type	Post-Excavation Sample Type	Analysis	Sample Depth (ft BPP)	Sample Elevation (ft MSL)	Lab ID	Sample ID	Sample Date/Time	Total PCBs (mg/kg)	Flag	Total BEHP (mg/kg)	Flag	Comment
BO	13	14.0	14.5	Delineation	N/A	N/A	1.0 - 1.5	12.5 - 13.0	460-185168-10	WP-STC-BO13-C-D-0-062519	6/25/19 14:25	0.012	U	0.1	J	
BP	13	14.0	16.5	Delineation	N/A	N/A	0.0 - 0.5	13.5 - 14.0	460-185378-6	WP-STC-BP13-A-B-0-062719	6/27/19 13:40	0.15	J	0.16	J	
BP	13	16.0	16.0	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	15.5 - 16.0	460-187389-4	WP-ST-BP13-A-B-0-072419	7/24/19 11:30	0.01	U	0.057	J	
BP	13	16.0	13.8	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	13.3 - 13.8	460-187389-5	WP-SB-BP13-C-D-0-072419	7/24/19 11:45	0.14	--	0.19	J	
BP	31	11.6	5.7	Post-Excavation	Bottom	Primary	0.0 - 0.5	5.2 - 5.7	460-186501-5	WP-PB-BP31-A-B-0-071219	7/12/19 13:30	0.011	U	1	--	Bottom sample from grid node BQ31 relocated to coordinate BP31 in deepest portion of excavation in this area.
BP	39	9.5	7.5	Post-Excavation	Bottom	Primary	0.0 - 0.5	7.1 - 7.5	460-184621-5	WP-SB-BP39-Q-R-0-061819	6/18/19 12:55	0.011	U	0.68	J	Bottom sample from grid node BQ40 relocated to coordinate BP39 in deepest portion of excavation in this area.
BP	43	9.5	8.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	8.4 - 8.9	460-184053-9	WP-SB-BP43-K-L-0-061119	6/11/19 12:35	0.36	--	5.4	--	
BP	43	9.5	10.6	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	10.1 - 10.6	460-184053-10	WP-ST-BP43-J-K-0-061119	6/11/19 12:55	0.018	U	1.5	--	
BP	46	10.4	8.6	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	8.1 - 8.6	460-184053-11	WP-SB-BP46-K-L-0-061119	6/11/19 13:10	0.56	--	19	J	
BP	46	10.4	10.4	Post-Excavation	Sidewall Top	Primary	0.0 - 0.3	10.1 - 10.4	460-184053-13	WP-ST-BP46-H-I-0-061119	6/11/19 13:20	0.33	--	3.4	--	
BP	48	11.4	9.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	8.5 - 9.0	460-184053-5	WP-SB-BP48-K-L-0-061119	6/11/19 10:50	1.8	--	190	--	Removed 6/26/19. Buried Coca-Cola vending machine removed and sediment collapsed preventing collection of additional sample material from the base of the sidewall.
BP	48	11.4	11.6	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.1 - 11.6	460-184053-6	WP-ST-BP48-F-G-0-061119	6/11/19 11:00	0.15	--	6.1	--	
BQ	16	15.0	15.0	Delineation	N/A	N/A	0.0 - 0.5	14.5 - 15.0	460-183103-2	WP-STC-BQ16-A-B-0-053019	5/30/19 11:28	0.78	J	0.19	J	
BQ	16	15.0	13.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	13.4 - 13.9	460-187175-4	WP-SB-BQ16-C-D-0-072219	7/22/19 15:50	0.011	U	0.021	U	
BQ	16	15.0	15.1	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	14.6 - 15.1	460-187389-1	WP-ST-BQ16-A-B-0-072419	7/24/19 10:40	0.014	U	0.043	J	
BQ	19	13.5	13.5	Delineation	N/A	N/A	0.0 - 0.5	13.0 - 13.5	460-186189-4	WP-STC-BQ19-A-B-0-070919	7/9/19 15:40	9.6	J	1.2	--	Removed; sidewall extended to the east to sample location WP-ST-BR19-A-B-0-072219
BQ	19	13.5	13.5	Delineation	N/A	N/A	1.0 - 1.5	12.1 - 12.5	460-186189-5	WP-STC-BQ19-C-D-0-070919	7/9/19 15:50	0.26	--	0.023	U	Removed; sidewall extended to the east to sample location WP-ST-BR19-A-B-0-072219
BQ	19	13.5	12.3	Post-Excavation	Bottom	Primary	0.0 - 0.5	11.8 - 12.3	460-187175-5	WP-PB-BQ19-C-D-0-072219	7/22/19 16:05	0.34	--	1.1	--	
BQ	21	14.0	13.1	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	12.6 - 13.1	460-182714-8	WP-ST-BQ21-C-D-0-052319	5/23/19 15:41	3	--	69	--	Removed; sidewall extended to the east to sample location WP-ST-BR22-A-B-0-052919
BQ	21	14.0	11.6	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	11.1 - 11.6	460-182714-9	WP-SB-BQ21-F-G-0-052319	5/23/19 17:15	4.7	J	140	J	Removed; sidewall extended to the east to sample location WP-SB-BR22-C-D-0-062519
BQ	22	14.0	11.2	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.7 - 11.2	460-182714-7	WP-PB-BQ22-D-E-0-052319	5/23/19 15:16	0.31	--	9.8	--	
BQ	25	14.0	10.5	Post-Excavation	Bottom	Primary	0.0 - 0.5	10.0 - 10.5	460-182769-1	WP-PB-BQ25-A-B-0-052419	5/24/19 9:25	0.19	--	2.5	--	
BQ	28	12.4	8.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.4 - 8.9	460-182769-2	WP-PB-BQ28-A-B-0-052419	5/24/19 9:48	0.68	--	13	J	
BQ	34	10.9	8.6	Post-Excavation	Bottom	Primary	0.0 - 0.5	8.1 - 8.6	460-184282-9	WP-PB-BQ34-K-L-0-061319	6/13/19 17:05	0.011	U	0.79	--	
BQ	37	10.5	7.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	7.4 - 7.9	460-184282-11	WP-PB-BQ37-M-N-0-061319	6/13/19 17:25	0.012	U	0.19	J	
BQ	40	9.7	10.2	Post-Excavation	Sidewall Top	Primary	0.0 - 0.3	9.9 - 10.2	460-184621-3	WP-ST-BQ40-I-J-0-061819	6/18/19 12:15	0.61	J	10	J	
BQ	40	9.7	8.2	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	7.7 - 8.2	460-184621-4	WP-SB-BQ40-Q-R-0-061819	6/18/19 12:35	0.016	U	1.8	--	
BR	19	15.0	14.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	13.5 - 14.0	460-187175-1	WP-ST-BR19-A-B-0-072219	7/22/19 14:30	0.97	--	0.42	--	
BR	19	15.5	15.5	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	15.0 - 15.5	460-187175-2	WP-SB-BR19-C-D-0-072219	7/22/19 14:45	0.012	U	0.027	J	
BR	22	14.0	12.6	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.1 - 12.6	460-183032-5	WP-SB-BR22-C-D-0-052919	5/29/19 11:55	4.7	--	120	--	Removed; sidewall extended to the east to sample location WP-SB-BR22-C-D-0-062519
BR	22	14.0	15.0	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	14.5 - 15.0	460-183032-6	WP-ST-BR22-A-B-0-052919	5/29/19 12:07	0.016	U	0.075	J	Sample collected on land surface. Sediment sample collected from this location on 6/25: WP-ST-BR22-A-B-0-062519.
BR	22	14.0	11.6	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	11.1 - 11.6	460-185168-3	WP-SB-BR22-C-D-0-062519	6/25/19 10:20	0.011	U	0.17	J	Sample taken after redig to proposed design horizontal limits. Sample taken at edge of pond.
BR	22	14.0	13.6	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	13.1 - 13.6	460-185168-4	WP-ST-BR22-A-B-0-062519	6/25/19 10:30	0.54	J	3.8	J	Sample taken after redig to proposed design horizontal limits. Sample taken at edge of pond.
BS	25	14.0	11.2	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	10.7 - 11.2	460-183032-1	WP-SB-BS25-G-H-0-052919	5/29/19 10:47	0.013	U	3.6	J	
BS	25	14.0	14.6	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	14.1 - 14.6	460-183032-9	WP-ST-BS25-A-B-0-052919	5/29/19 14:52	0.11	--	0.2	J	
BS	25	14.0	13.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	12.5 - 13.0	460-185378-5	WP-SB-BS25-C-D-0-062719	6/27/19 12:30	0.014	U	0.43	J	Sample taken after redig to proposed design horizontal limits. Sample taken at edge of pond.
BS	28	12.5	10.0	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.5 - 10.0	460-183032-3	WP-SB-BS28-I-J-0-052919	5/29/19 11:10	0.46	--	48	--	Removed; sidewall extended to the east to sample location WP-SB-BS28-M-N-0-062819
BS	28	12.5	13.1	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	12.6 - 13.1	460-183032-4	WP-ST-BS28-D-E-0-052919	5/29/19 11:25	0.13	--	3.6	--	
BS	28	12.5	8.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.4	8.5 - 8.9	460-185437-1	WP-SB-BS28-M-N-0-062819	6/28/19 10:25	0.013	U	0.54	--	Sample taken after redig to proposed design horizontal limits. Sample taken at edge of pond.
BS	37	10.5	10.1	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	9.6 - 10.1	460-184282-5	WP-ST-BS37-H-I-0-061319	6/13/19 15:40	0.96	--	30	--	Removed; sidewall extended to the southeast to sample location WP-STC-BS37-H-I-0-061819
BS	37	10.5	8.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	8.4 - 8.9	460-184282-6	WP-SB-BS37-K-L-0-061319	6/13/19 16:00	0.041	JN	0.19	J	
BS	37	10.5	10.4	Post-Excavation	Sidewall Stepout	Contingency	0.0 - 0.5	9.9 - 10.4	460-184621-7	WP-STC-BS37-H-I-0-061819	6/18/19 13:45	0.87	--	20	J	
BT	31	11.8	9.8	Post-Excavation	Bottom	Primary	0.0 - 0.4	9.4 - 9.8	460-184282-12	WP-PB-BT31-A-B-0-061319	6/13/19 17:40	0.6	--	26	--	Removed; bottom extended to contingency sample WP-PBC-BT31-C-D-0-061819 depth
BT	31	11.8	9.7	Post-Excavation	Below Bottom	Contingency	1.0 - 1.5	8.2 - 8.7	460-184621-8	WP-PBC-BT31-C-D-0-061819	6/18/19 15:20	0.011	U	0.87	--	
BT	34	10.9	9.9	Post-Excavation	Bottom	Primary	0.0 - 0.5	9.4 - 9.9	460-185378-1	WP-PB-BT34-I-J-0-062719	6/27/19 11:15	0.92	J	11	J	
BU	31	12.0	9.5	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.0 - 9.5	460-184282-7	WP-SB-BU34-I-J-0-062719	6/13/19 16:30	2.4	--	76	--	Removed; sidewall extended to the east to sample location WP-SB-BS28-M-N-0-062819
BU	31	12.0	11.7	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	11.2 - 11.7	460-184282-8	WP-ST-BU31-E-F-0-061319	6/13/19 16:45	0.1	--	2.1	--	
BU	34	12.0	12.7	Post-Excavation	Sidewall Top	Primary	0.0 - 0.5	12.2 - 12.7	460-185378-3	WP-ST-BU34-E-F-0-062719	6/27/19 11:45	0.077	J	0.35	J	
BU	34	12.0	9.9	Post-Excavation	Sidewall Base	Primary	0.0 - 0.5	9.4 - 9.9	460-185378-4	WP-SB-BU34-I-J-0-062719	6/27/19 12:15	0.012	U	1.2	--	

Notes:



Table 5-1 Post-Excavation Sampling Results  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey

Post-Remediation Surveyed																	
Grid Column	Grid Row	Pre-Remediation	Bottom Elev.	Sample Type	Post-Excavation	Analysis	Sample Depth	Sample Elevation	Lab ID	Sample ID	Sample Date/Time	Total PCBs	Flag	Total BEHP	Flag	Comment	
		Bottom Elev. (ft MSL)	(ft MSL)														(ft BPB)

See Figure 5-1 for post-dredging sample locations.

As approved by US EPA on April 6, 2016 sample locations CP-37, CP-42, CP-43, CP-44, and CP-64 were used in lieu of post-excavation samples.

Sidewall top post-excavation samples at locations AY-38 and AY-40 were not collected because the wall of the excavation was removed to allow for dredge access.

BEHP - Bis(2-ethylhexyl)phthalate

ft BPB - Feet Below Pond Bottom

ft MSL - Feet Mean Sea Level

mg/kg - milligrams per kilogram

PCBs - Polychlorinated biphenyls

U - not detected; value shown is method detection limit

J - estimated concentration

N/A - not applicable



**Table 5-2 Delineation Sampling Results**  
**Woodbridge Pond Remediation Project**  
**Woodbridge, New Jersey**

Grid Column	Grid Row	Surface Elev. (ft MSL)	Sample Depth (ft BPB)	Sample Elevation (ft MSL)	Lab ID	Sample ID	Sample Date/Time	Total PCBs (mg/kg)	Total BEHP (mg/kg)	Flag	Flag	Comment
BE	10	13.9	0.0 - 0.5	13.4 - 13.9	460-184877-9	WP-STC-BE10-A-B-0-062119	6/21/19 10:45	0.71	J	3.2	J	
BE	14	13.2	0.0 - 0.5	12.7 - 13.2	460-183224-3	WP-STC-BE14-A-B-0-053119	5/31/19 10:40	0.023	U	1	--	
BG	10	13.8	0.0 - 0.5	13.3 - 13.8	460-185168-12	WP-STC-BG10-A-B-0-062519	6/25/19 14:40	0.15	--	1.2	--	
BH	1	15.5	0.0 - 0.5	15.0 - 15.5	460-185770-8	WP-STC-BH1-A-B-0-070219	7/2/19 15:08	0.015	U	0.028	U	
BH	1	15.5	1.0 - 1.5	14.0 - 14.5	460-185770-9	WP-STC-BH1-C-D-0-070219	7/2/19 15:17	0.016	U	0.031	U	
BH	4	14.5	0.0 - 0.5	14.0 - 14.5	460-185770-10	WP-STC-BH4-A-B-0-070219	7/2/19 15:25	0.25	--	0.044	U	
BH	4	14.5	1.0 - 1.5	13.0 - 13.5	460-185770-11	WP-STC-BH4-C-D-0-070219	7/2/19 15:45	0.013	U	0.025	U	
BH	7	14.5	0.0 - 0.5	14.0 - 14.5	460-184877-8	WP-STC-BH7-A-B-0-062119	6/21/19 10:25	0.73	--	4.2	--	
BH	8	14.0	0.0 - 0.5	13.5 - 14.0	460-184877-5	WP-STC-BH8-A-B-0-062119	6/21/19 9:55	0.58	J	0.96	J	
BH	10	14.0	0.0 - 0.5	13.5 - 14.0	460-184793-6	WP-STC-BH10-A-B-0-062019	6/20/19 14:20	10	--	1200	--	Excavated
BH	10	14.0	1.0 - 1.5	12.5 - 13.0	460-184793-7	WP-STC-BH10-C-D-0-062019	6/20/19 14:30	0.013	U	1.9	--	
BH	11	14.0	0.0 - 0.5	13.5 - 14.0	460-184793-4	WP-STC-BH11-A-B-0-062019	6/20/19 13:55	3.6	--	1400	--	Excavated
BH	11	14.0	1.0 - 1.5	12.5 - 13.0	460-184793-5	WP-STC-BH11-C-D-0-062019	6/20/19 14:05	0.11	--	7.3	--	
BH	13	14.0	0.0 - 0.5	13.5 - 14.0	460-183685-11	WP-STC-BH13-A-B-0-060619	6/6/19 17:15	1.1	J	0.42	J	Excavated
BH	14	14.0	0.0 - 0.5	13.5 - 14.0	460-183103-4	WP-STC-BH14-A-B-0-053019	5/30/19 11:55	1.7	J	1.5	--	Excavated
BH	14	14.0	1.0 - 1.3	12.7 - 13.0	460-183103-6	WP-STC-BH14-C-D-0-053019	5/30/19 13:49	5.2	--	16	J	Excavated
BH	14	14.0	3.0 - 3.4	10.6 - 11.0	460-183685-10	WP-STC-BH14-G-H-0-060619	6/6/19 16:40	0.011	U	0.11	J	
BH	17	14.0	2.5 - 3.0	11.0 - 11.5	460-183752-6	WP-STC-BH17-F-G-0-060719	6/7/19 11:10	0.015	U	0.68	J	
BH	19	14.0	0.0 - 0.2	13.9 - 14.0	460-182489-5	WP-STC10N-BH19-A-B-0-052119	5/21/19 14:46	2.8	J	54	J	Excavated
BH	19	14.0	0.0 - 0.4	13.6 - 14.0	460-182714-3	WP-STC15N-BH19-A-B-0-052319	5/23/19 11:15	6	J	1.5	J	Excavated
BJ	6	13.5	0.0 - 0.5	13.0 - 13.5	460-185770-3	WP-STC-BJ6-A-B-0-070219	7/2/19 11:05	0.93	J	31	J	Excavated
BJ	6	13.5	1.0 - 1.5	12.0 - 12.5	460-185770-4	WP-STC-BJ6-C-D-0-070219	7/2/19 11:17	0.014	U	0.14	J	
BK	1	13.5	0.0 - 0.5	13.0 - 13.5	460-185770-14	WP-STC-BK1-A-B-0-070219	7/2/19 16:10	0.028	U	0.054	U	
BK	1	13.5	1.0 - 1.5	12.0 - 12.5	460-185770-15	WP-STC-BK1-C-D-0-070219	7/2/19 16:25	0.029	U	0.054	U	
BK	4	13.5	0.0 - 0.5	13.0 - 13.5	460-185770-12	WP-STC-BK4-A-B-0-070219	7/2/19 15:53	0.026	U	0.05	U	
BK	4	13.5	1.0 - 1.5	12.0 - 12.5	460-185770-13	WP-STC-BK4-C-D-070219	7/2/19 15:58	0.017	U	0.031	U	
BK	6	15.0	0.0 - 0.5	14.5 - 15.0	460-185770-1	WP-STC-BK6-A-B-0-070219	7/2/19 10:48	0.55	--	1.7	--	
BK	6	15.0	1.0 - 1.5	13.5 - 14.0	460-185770-2	WP-STC-BK6-C-D-0-070219	7/2/19 10:55	0.012	U	0.12	J	
BK	7	14.0	0.0 - 0.5	13.5 - 14.0	460-185168-7	WP-STC-BK7-A-B-0-062519	6/25/19 13:45	3.4	--	41	--	Excavated
BK	7	14.0	1.0 - 1.5	12.5 - 13.0	460-185168-8	WP-STC-BK7-C-D-0-062519	6/25/19 14:00	0.013	U	0.8	--	
BK	8	14.0	0.0 - 0.5	13.5 - 14.0	460-185168-5	WP-STC-BK8-A-B-0-062519	6/25/19 12:10	2.6	--	35	--	Excavated
BK	8	14.0	1.0 - 1.5	12.5 - 13.0	460-185168-6	WP-STC-BK8-C-D-0-062519	6/25/19 12:35	0.019	U	0.23	J	
BK	10	14.0	0.0 - 0.5	13.5 - 14.0	460-184793-8	WP-STC-BK10-A-B-0-062019	6/20/19 14:45	2.3	--	210	--	Excavated
BK	10	14.0	1.0 - 1.5	12.5 - 13.0	460-184793-9	WP-STC-BK10-C-D-0-062019	6/20/19 15:00	0.42	--	7.7	--	
BK	14	14.0	0.0 - 0.5	13.5 - 14.0	460-183685-14	WP-STC-BK14-A-B-0-060619	6/6/19 17:55	0.63	--	0.4	J	
BK	15	14.0	0.0 - 0.5	13.5 - 14.0	460-183103-3	WP-STC-BK15-A-B-0-053019	5/30/19 11:43	5.6	--	90	--	Excavated
BK	15	14.0	2.5 - 3.0	11.0 - 11.5	460-183752-7	WP-STC-BK15-F-G-0-060719	6/7/19 12:10	0.014	U	0.49	--	
BK	18	14.0	2.5 - 3.0	11.0 - 11.5	460-183752-3	WP-STC-BK18-F-G-0-060719	6/7/19 10:45	0.11	--	0.44	J	



**Table 5-2 Delineation Sampling Results  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Grid Column	Grid Row	Surface Elev. (ft MSL)	Sample Depth (ft BPB)	Sample Elevation (ft MSL)	Lab ID	Sample ID	Sample Date/Time	Total PCBs (mg/kg)	Flag	Total BEHP (mg/kg)	Flag	Comment
BL	6	14.0	0.0 - 0.5	13.5 - 14.0	460-185770-5	WP-STC-BL6-A-B-0-070219	7/2/19 11:25	0.015	U	0.077	J	
BL	6	14.0	1.0 - 1.5	12.5 - 13.0	460-185770-6	WP-STC-BL6-C-D-0-070219	7/2/19 11:35	0.012	U	0.022	U	
BM	10	14.5	0.0 - 0.5	14.0 - 14.5	460-185168-14	WP-STC-BM10-A-B-0-062519	6/25/19 15:17	0.91	--	1.8	--	
BN	1	16.5	0.0 - 0.5	16.0 - 16.5	460-187462-4	WP-BN1-10E-A-B-0-072519	7/25/19 14:25	0.29	--	0.36	J	
BN	1	16.5	0.0 - 0.5	16.0 - 16.5	460-187462-2	WP-BN1-10N-A-B-0-072519	7/25/19 14:10	0.01	U	0.041	J	
BN	1	16.5	0.0 - 0.5	16.0 - 16.5	460-187462-3	WP-BN1-10S-A-B-0-072519	7/25/19 14:15	0.011	U	0.087	J	
BN	1	16.5	0.0 - 0.5	16.0 - 16.5	460-186929-3	WP-BN1-5E-A-B-0-071819	7/18/19 11:45	14	--	1.5	--	To be remediated separately
BN	1	16.5	1.0 - 1.5	15.0 - 15.5	460-187462-1	WP-BN1-5E-C-D-0-072519	7/25/19 13:50	0.01	U	0.019	U	
BN	1	16.5	0.0 - 0.5	16.0 - 16.5	460-186929-5	WP-BN1-5N-A-B-0-071819	7/18/19 12:20	0.13	--	0.045	J	
BN	1	16.5	0.0 - 0.5	16.0 - 16.5	460-186929-4	WP-BN1-5S-A-B-0-071819	7/18/19 11:50	0.41	--	0.12	J	
BN	1	16.5	0.0 - 0.5	16.0 - 16.5	460-186929-6	WP-BN1-5W-A-B-0-071819	7/18/19 12:35	1.1	--	12	--	To be remediated separately
BN	1	16.5	0.0 - 0.5	16.0 - 16.5	460-185770-18	WP-STC-BN1-A-B-0-070219	7/2/19 16:45	1.4	--	0.95	--	To be remediated separately
BN	1	16.5	1.0 - 1.5	15.0 - 15.5	460-185770-19	WP-STC-BN1-C-D-0-070219	7/2/19 16:55	0.01	U	0.02	U	
BN	4	16.0	0.0 - 0.5	15.5 - 16.0	460-185770-16	WP-STC-BN4-A-B-0-070219	7/2/19 16:31	0.12	--	0.1	J	
BN	4	16.0	1.0 - 1.5	14.5 - 15.0	460-185770-17	WP-STC-BN4-C-D-0-070219	7/2/19 16:40	0.011	U	0.02	U	
BN	11	14.5	0.0 - 0.5	14.0 - 14.5	460-184793-1	WP-STC-BN11-A-B-0-062019	6/20/19 13:15	0.27	--	0.64	--	
BN	13	14.5	0.0 - 0.5	14.0 - 14.5	460-184793-2	WP-STC-BN13-A-B-0-062019	6/20/19 13:30	3.4	--	0.84	--	Excavated
BN	13	14.5	1.0 - 1.5	13.0 - 13.5	460-184793-3	WP-STC-BN13-C-D-0-062019	6/20/19 13:45	0.012	U	0.023	U	
BN	14	14.5	0.0 - 0.5	14.0 - 14.5	460-183685-12	WP-STC-BN14-A-B-0-060619	6/6/19 17:35	2.5	--	4.9	--	Excavated
BN	14	14.5	1.0 - 1.4	13.2 - 13.5	460-183685-13	WP-STC-BN14-C-D-0-060619	6/6/19 17:40	1.1	--	--	--	Excavated
BN	15	14.5	0.0 - 0.8	13.7 - 14.5	460-183103-1	WP-STC-BN15-A-B-0-053019	5/30/19 11:15	2	J	15	--	Excavated
BN	15	14.5	1.0 - 1.4	13.1 - 13.5	460-183103-8	WP-STC-BN15-C-D-0-053019	5/30/19 14:17	1.4	--	77	--	Excavated
BN	15	14.5	2.5 - 3.0	11.5 - 12.0	460-183752-8	WP-STC-BN15-F-G-0-060719	6/7/19 12:35	0.015	U	0.16	J	
BN	18	13.5	2.5 - 3.0	10.5 - 11.0	460-183752-1	WP-STC-BN18-F-G-0-060719	6/7/19 10:05	0.21	--	2.1	J	
BO	10	14.5	0.0 - 0.5	14.0 - 14.5	460-186189-7	WP-STC-BO10-A-B-0-070919	7/9/19 16:00	0.26	--	5.4	--	
BO	13	14.0	0.0 - 0.5	13.5 - 14.0	460-185168-9	WP-STC-BO13-A-B-0-062519	6/25/19 14:10	7.3	--	38	--	Excavated
BO	13	14.0	1.0 - 1.5	12.5 - 13.0	460-185168-10	WP-STC-BO13-C-D-0-062519	6/25/19 14:25	0.012	U	0.1	J	
BP	13	14.0	0.0 - 0.5	13.5 - 14.0	460-185378-6	WP-STC-BP13-A-B-0-062719	6/27/19 13:40	0.15	J	0.16	J	
BQ	16	15.0	0.0 - 0.5	14.5 - 15.0	460-183103-2	WP-STC-BQ16-A-B-0-053019	5/30/19 11:28	0.78	J	0.19	J	
BQ	19	13.5	0.0 - 0.5	13.0 - 13.5	460-186189-4	WP-STC-BQ19-A-B-0-070919	7/9/19 15:40	9.6	J	1.2	--	Excavated
BQ	19	13.5	1.0 - 1.5	12.1 - 12.5	460-186189-5	WP-STC-BQ19-C-D-0-070919	7/9/19 15:50	0.26	--	0.023	U	

Notes:

See Figure 5-2 for delineation sample locations.

BEHP - Bis(2-ethylhexyl)phthalate

ft BPB - Feet Below Pond Bottom

ft MSL - Feet Mean Sea Level



### Table 5-2 Delineation Sampling Results Woodbridge Pond Remediation Project

Grid	Grid	Surface	Sample	Sample				Total	Total			
Column	Row	Elev.	Depth	Elevation	Lab ID	Sample ID	Sample	PCBs	BEHP	Flag	Flag	Comment
		(ft MSL)	(ft BPB)	(ft MSL)			Date/Time	(mg/kg)		(mg/kg)		

mg/kg - milligrams per kilogram

## PCBs - Polychlorinated biphenyls

U - not detected; value shown is method detection limit

J - estimated concentration

N/A - not applicable



**Table 5-3 Waste Disposal Quantities**  
**Woodbridge Pond Remediation Project**  
**Woodbridge, New Jersey**

Waste Description	Disposal Facility	No. of	
		Shipments	Quantity Shipped
Bulk non-hazardous solid waste	Fairless	421	9,138.41 tons
Bulk PCB remediation waste based on in-situ PCB concentrations of 50 mg/kg or greater	Wayne	27	631,924 kilograms
Drummed PCB remediation waste based on in-situ PCB concentrations of 50 mg/kg or greater	Wayne	1	1,400 kilograms
Filtered or untreated wastewater characterized as non-hazardous	Clean Water	34	194,705 gallons

Notes:

mg/kg: milligrams per kilogram dry weight basis

PCB: Total polychlorinated biphenyls

RCRA: Resource Conservation and Recovery Act

TSCA: Toxic Substances Control Act

Wayne: Wayne Disposal, Inc. Site #2 Landfill, 49350 N I-94 Service Drive, Belleville, MI 48111 (EPA ID: MID048090633)

Fairless: Fairless Landfill, 1000 New Ford Mill Road, Morrisville, PA 19067 (PA DEP ID: 716489)

Clean Water: Clean Water of New York, Inc., 3249 Richmond Terrace, Staten Island, NY 10303 (EPA ID: NY0000968545)



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
4/24/19	WMNA T862008	676013	Stabilized clean sediment from access channel	23.81	Horwith
4/24/19	WMNA T862009	676024	Stabilized clean sediment from access channel	7.75	Horwith
4/25/19	WMNA T862010	676972	Stabilized clean sediment from access channel	24.55	Horwith
4/25/19	WMNA T862011	676975	Stabilized clean sediment from access channel	21.27	Horwith
4/25/19	WMNA T862012	677289	Stabilized clean sediment from access channel	21.01	Horwith
4/25/19	WMNA T862013	677286	Stabilized clean sediment from access channel	22.79	Horwith
4/26/19	WMNA T862014	677946	Stabilized clean sediment from access channel	26.12	Horwith
4/29/19	WMNA T862015	679002	Stabilized clean sediment from access channel	23.58	Horwith
4/29/19	WMNA T862016	679014	Stabilized clean sediment from access channel	23.01	Horwith
4/29/19	WMNA T862017	679229	Stabilized clean sediment from access channel	22.10	Horwith
4/29/19	WMNA T862018	679247	Stabilized clean sediment from access channel	20.58	Horwith
4/30/19	WMNA T862019	679978	Stabilized clean sediment from access channel	20.30	Horwith
4/30/19	WMNA T862020	680100	Stabilized clean sediment from access channel	8.92	Horwith
5/2/19	WMNA T862021	681981	Stabilized contaminated pond bottom sediment	20.26	Horwith
5/2/19	WMNA T862022	681998	Stabilized contaminated pond bottom sediment	19.75	Horwith
5/2/19	WMNA T862023	682030	Stabilized contaminated pond bottom sediment	21.39	Horwith
5/2/19	WMNA T862024	682056	Stabilized contaminated pond bottom sediment	20.99	Horwith
5/2/19	WMNA T862025	682272	Stabilized contaminated pond bottom sediment	22.42	Horwith
5/3/19	WMNA T862026	683012	Stabilized contaminated pond bottom sediment	24.45	Horwith
5/3/19	WMNA T862027	683043	Stabilized contaminated pond bottom sediment	21.60	Horwith
5/3/19	WMNA T862028	683288	Stabilized contaminated pond bottom sediment	25.79	Horwith
5/3/19	WMNA T862029	683326	Stabilized contaminated pond bottom sediment	16.12	Horwith
5/6/19	WMNA T862030	684301	Stabilized contaminated pond bottom sediment	22.77	Horwith
5/6/19	WMNA T862031	684304	Stabilized contaminated pond bottom sediment	22.39	Horwith
5/6/19	WMNA T862032	684544	Stabilized contaminated pond bottom sediment	22.62	Horwith
5/6/19	WMNA T862033	684564	Stabilized contaminated pond bottom sediment	22.49	Horwith
5/7/19	WMNA T862034	685181	Stabilized contaminated pond bottom sediment	20.62	Horwith
5/7/19	WMNA T862035	685198	Stabilized contaminated pond bottom sediment	24.66	Horwith
5/7/19	WMNA T862036	685226	Stabilized contaminated pond bottom sediment	22.18	Horwith
5/7/19	WMNA T862037	685433	Stabilized contaminated pond bottom sediment	21.01	Horwith
5/7/19	WMNA T862038	685453	Stabilized contaminated pond bottom sediment	23.35	Horwith
5/7/19	WMNA T862039	685489	Stabilized contaminated pond bottom sediment	21.81	Horwith
5/7/19	WMNA T862040	685681	Stabilized contaminated pond bottom sediment	22.18	Horwith
5/7/19	WMNA T862041	685705	Stabilized contaminated pond bottom sediment	22.94	Horwith
5/8/19	WMNA T862042	686202	Stabilized contaminated pond bottom sediment	20.14	Horwith
5/8/19	WMNA T862043	686225	Stabilized contaminated pond bottom sediment	21.45	Horwith
5/8/19	WMNA T862044	686254	Stabilized contaminated pond bottom sediment	20.50	Horwith
5/8/19	WMNA T862045	686537	Stabilized contaminated pond bottom sediment	23.74	Horwith
5/8/19	WMNA T862046	686557	Stabilized contaminated pond bottom sediment	25.39	Horwith
5/8/19	WMNA T862047	686574	Stabilized contaminated pond bottom sediment	23.24	Horwith
5/9/19	WMNA T862048	687302	Stabilized contaminated pond bottom sediment	20.63	Horwith
5/9/19	WMNA T862049	687318	Stabilized contaminated pond bottom sediment	21.63	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
5/9/19	WMNA T862050	687329	Stabilized contaminated pond bottom sediment	20.38	Horwith
5/9/19	WMNA T862051	687552	Stabilized contaminated pond bottom sediment	21.13	Horwith
5/9/19	WMNA T862052	687585	Stabilized contaminated pond bottom sediment	19.70	Horwith
5/9/19	WMNA T862053	687617	Stabilized contaminated pond bottom sediment	21.54	Horwith
5/9/19	WMNA T862054	687820	Stabilized contaminated pond bottom sediment	21.58	Horwith
5/9/19	WMNA T862055	687838	Stabilized contaminated pond bottom sediment	23.03	Horwith
5/9/19	WMNA T862056	687858	Stabilized contaminated pond bottom sediment	23.85	Horwith
5/10/19	WMNA T862057	688421	Stabilized contaminated pond bottom sediment	18.64	Horwith
5/10/19	WMNA T862058	688425	Stabilized contaminated pond bottom sediment	18.18	Horwith
5/10/19	WMNA T862059	688590	Stabilized contaminated pond bottom sediment	19.22	Horwith
5/10/19	WMNA T862060	688705	Stabilized contaminated pond bottom sediment	21.32	Horwith
5/13/19	WMNA T862061	689489	Stabilized contaminated pond bottom sediment	20.41	Horwith
5/13/19	WMNA T862062	689494	Stabilized contaminated pond bottom sediment	21.73	Horwith
5/13/19	WMNA T862063	689514	Stabilized contaminated pond bottom sediment	20.77	Horwith
5/13/19	WMNA T862064	689733	Stabilized contaminated pond bottom sediment	22.06	Horwith
5/13/19	WMNA T862065	689755	Stabilized contaminated pond bottom sediment	20.75	Horwith
5/13/19	WMNA T862066	689768	Stabilized contaminated pond bottom sediment	22.82	Horwith
5/13/19	WMNA T862067	689783	Stabilized contaminated pond bottom sediment	24.04	Horwith
5/14/19	WMNA T862068	690365	Stabilized contaminated pond bottom sediment	20.05	Horwith
5/14/19	WMNA T862069	690367	Stabilized contaminated pond bottom sediment	20.87	Horwith
5/14/19	WMNA T862070	690399	Stabilized contaminated pond bottom sediment	20.86	Horwith
5/14/19	WMNA T862071	690396	Stabilized contaminated pond bottom sediment	21.31	Horwith
5/14/19	WMNA T862072	690705	Stabilized contaminated pond bottom sediment	22.57	Horwith
5/14/19	WMNA T862073	690724	Stabilized contaminated pond bottom sediment	21.06	Horwith
5/14/19	WMNA T862074	690734	Stabilized contaminated pond bottom sediment	20.61	Horwith
5/14/19	WMNA T862075	690740	Stabilized contaminated pond bottom sediment	21.15	Horwith
5/14/19	WMNA T862076	690765	Stabilized contaminated pond bottom sediment	20.07	Horwith
5/15/19	WMNA T862077	691281	Stabilized contaminated pond bottom sediment	22.44	Horwith
5/15/19	WMNA T862078	691301	Stabilized contaminated pond bottom sediment	19.62	Horwith
5/15/19	WMNA T862079	691328	Stabilized contaminated pond bottom sediment	20.32	Horwith
5/15/19	WMNA T862080	691355	Stabilized contaminated pond bottom sediment	20.86	Horwith
5/15/19	WMNA T862081	691619	Stabilized contaminated pond bottom sediment	21.57	Horwith
5/15/19	WMNA T862082	691620	Stabilized contaminated pond bottom sediment	19.20	Horwith
5/15/19	WMNA T862083	691667	Stabilized contaminated pond bottom sediment	23.03	Horwith
5/15/19	WMNA T862084	691669	Stabilized contaminated pond bottom sediment	22.76	Horwith
5/16/19	WMNA T862085	692252	Stabilized contaminated pond bottom sediment	18.92	Horwith
5/16/19	WMNA T862086	692282	Stabilized contaminated pond bottom sediment	20.54	Horwith
5/16/19	WMNA T862087	692581	Stabilized contaminated pond bottom sediment	19.45	Horwith
5/16/19	WMNA T862088	692670	Stabilized contaminated pond bottom sediment	22.81	Horwith
5/16/19	WMNA T862089	692717	Stabilized contaminated pond bottom sediment	18.53	J&D
5/16/19	WMNA T862090	692716	Stabilized contaminated pond bottom sediment	21.23	J&D
5/17/19	WMNA T862091	693192	Stabilized contaminated pond bottom sediment	22.72	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
5/17/19	WMNA T862092	693225	Stabilized contaminated pond bottom sediment	20.56	Horwith
5/17/19	WMNA T862093	693228	Stabilized contaminated pond bottom sediment	20.60	Horwith
5/17/19	WMNA T862094	693268	Stabilized contaminated pond bottom sediment	20.74	Horwith
5/17/19	WMNA T862095	693266	Stabilized contaminated pond bottom sediment	20.80	Horwith
5/17/19	WMNA T862096	693590	Stabilized contaminated pond bottom sediment	21.03	Horwith
5/17/19	WMNA T862097	693603	Stabilized contaminated pond bottom sediment	20.51	Horwith
5/17/19	WMNA T862098	693611	Stabilized contaminated pond bottom sediment	22.98	Horwith
5/17/19	WMNA T862099	693646	Stabilized contaminated pond bottom sediment	20.59	Horwith
5/17/19	WMNA T862100	693644	Stabilized contaminated pond bottom sediment	21.03	Horwith
5/20/19	WMNA T862101	694762	Stabilized contaminated pond bottom sediment	21.68	Horwith
5/20/19	WMNA T862102	694765	Stabilized contaminated pond bottom sediment	22.06	Horwith
5/20/19	WMNA T862103	695086	Stabilized contaminated pond bottom sediment	21.78	Horwith
5/20/19	WMNA T862104	695092	Stabilized contaminated pond bottom sediment	22.58	Horwith
5/20/19	WMNA T862105	695094	Stabilized contaminated pond bottom sediment	23.08	Horwith
5/20/19	WMNA T862106	695104	Stabilized contaminated pond bottom sediment	20.88	Horwith
5/20/19	WMNA T864182	694779	Stabilized contaminated pond bottom sediment	22.87	Horwith
5/21/19	WMNA T862107	695760	Stabilized contaminated pond bottom sediment	20.27	Horwith
5/21/19	WMNA T862108	695756	Stabilized contaminated pond bottom sediment	20.93	Horwith
5/21/19	WMNA T864084	695774	Stabilized contaminated pond bottom sediment	22.41	Horwith
5/21/19	WMNA T864085	695790	Stabilized contaminated pond bottom sediment	20.35	Horwith
5/21/19	WMNA T864086	695793	Stabilized contaminated pond bottom sediment	20.64	Horwith
5/21/19	WMNA T864087	695806	Stabilized contaminated pond bottom sediment	23.01	Horwith
5/22/19	WMNA T864088	696789	Stabilized contaminated pond bottom sediment	22.52	Horwith
5/22/19	WMNA T864089	696812	Stabilized contaminated pond bottom sediment	23.91	Horwith
5/22/19	WMNA T864090	696819	Stabilized contaminated pond bottom sediment	23.19	Horwith
5/22/19	WMNA T864091	697079	Stabilized contaminated pond bottom sediment	21.84	Horwith
5/22/19	WMNA T864092	697093	Stabilized contaminated pond bottom sediment	21.23	Horwith
5/22/19	WMNA T864093	697108	Stabilized contaminated pond bottom sediment	22.87	Horwith
5/22/19	WMNA T864094	697209	Stabilized contaminated pond bottom sediment	19.64	Horwith
5/23/19	WMNA T864095	697878	Stabilized contaminated pond bottom sediment	19.94	Horwith
5/23/19	WMNA T864096	697911	Stabilized contaminated pond bottom sediment	20.10	Horwith
5/23/19	WMNA T864097	697913	Stabilized contaminated pond bottom sediment	20.41	Horwith
5/23/19	WMNA T864098	697914	Stabilized contaminated pond bottom sediment	23.10	Horwith
5/23/19	WMNA T864099	698082	Stabilized contaminated pond bottom sediment	21.89	Horwith
5/23/19	WMNA T864100	698193	Stabilized contaminated pond bottom sediment	22.47	Horwith
5/23/19	WMNA T864101	698196	Stabilized contaminated pond bottom sediment	21.59	Horwith
5/23/19	WMNA T864102	698201	Stabilized contaminated pond bottom sediment	21.52	Horwith
5/24/19	WMNA T864103	698704	Stabilized contaminated pond bottom sediment	21.25	Horwith
5/24/19	WMNA T864104	698722	Stabilized contaminated pond bottom sediment	22.72	Horwith
5/24/19	WMNA T864105	698731	Stabilized contaminated pond bottom sediment	20.38	Horwith
5/24/19	WMNA T864106	698742	Stabilized contaminated pond bottom sediment	20.95	Horwith
5/24/19	WMNA T864107	698764	Stabilized contaminated pond bottom sediment	21.68	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
5/24/19	WMNA T864108	698761	Stabilized contaminated pond bottom sediment	21.25	Horwith
5/24/19	WMNA T864109	698785	Stabilized contaminated pond bottom sediment	23.63	Horwith
5/24/19	WMNA T864110	699009	Stabilized contaminated pond bottom sediment	22.23	Horwith
5/24/19	WMNA T864111	699043	Stabilized contaminated pond bottom sediment	22.95	Horwith
5/24/19	WMNA T864112	699068	Stabilized contaminated pond bottom sediment	20.57	Horwith
5/24/19	WMNA T864113	699075	Stabilized contaminated pond bottom sediment	22.56	Horwith
5/24/19	WMNA T864114	699101	Stabilized contaminated pond bottom sediment	20.06	Horwith
5/24/19	WMNA T864115	699104	Stabilized contaminated pond bottom sediment	20.57	Horwith
5/24/19	WMNA T864116	699110	Stabilized contaminated pond bottom sediment	21.11	Horwith
5/28/19	WMNA T864117	700258	Stabilized contaminated pond bottom sediment	23.00	Horwith
5/28/19	WMNA T864118	700278	Stabilized contaminated pond bottom sediment	22.57	Horwith
5/28/19	WMNA T864119	700280	Stabilized contaminated pond bottom sediment	22.42	Horwith
5/28/19	WMNA T864120	700309	Stabilized contaminated pond bottom sediment	21.60	Horwith
5/28/19	WMNA T864121	700829	Stabilized contaminated pond bottom sediment	20.17	Horwith
5/28/19	WMNA T864122	700805	Stabilized contaminated pond bottom sediment	23.47	Horwith
5/28/19	WMNA T864123	700808	Stabilized contaminated pond bottom sediment	23.15	Horwith
5/28/19	WMNA T864124	700823	Stabilized contaminated pond bottom sediment	21.00	Horwith
5/30/19	WMNA T864125	702373	Stabilized contaminated pond bottom sediment	20.92	Horwith
5/30/19	WMNA T864126	702380	Stabilized contaminated pond bottom sediment	23.15	Horwith
5/30/19	WMNA T864127	702384	Stabilized contaminated pond bottom sediment	21.99	Horwith
5/30/19	WMNA T864128	702422	Stabilized contaminated pond bottom sediment	21.33	Horwith
5/30/19	WMNA T864129	702454	Stabilized contaminated pond bottom sediment	21.13	Horwith
5/30/19	WMNA T864130	702460	Stabilized contaminated pond bottom sediment	21.44	Horwith
5/30/19	WMNA T864131	702491	Stabilized contaminated pond bottom sediment	20.84	Horwith
5/30/19	WMNA T864132	702495	Stabilized contaminated pond bottom sediment	22.33	Horwith
5/30/19	WMNA T864133	702767	Stabilized contaminated pond bottom sediment	21.53	Horwith
5/30/19	WMNA T864134	702791	Stabilized contaminated pond bottom sediment	23.75	Horwith
5/30/19	WMNA T864135	702795	Stabilized contaminated pond bottom sediment	24.71	Horwith
6/3/19	WMNA T864136	704856	Stabilized contaminated pond bottom sediment	23.16	Horwith
6/3/19	WMNA T864137	704878	Stabilized contaminated pond bottom sediment	22.67	Horwith
6/3/19	WMNA T864138	704892	Stabilized contaminated pond bottom sediment	25.48	Horwith
6/3/19	WMNA T864139	704912	Stabilized contaminated pond bottom sediment	26.08	Horwith
6/3/19	WMNA T864140	704932	Stabilized contaminated pond bottom sediment	21.47	Horwith
6/3/19	WMNA T864141	704963	Stabilized contaminated pond bottom sediment	21.00	Horwith
6/3/19	WMNA T864142	705044	Stabilized contaminated pond bottom sediment	21.35	Horwith
6/3/19	WMNA T864143	705216	Stabilized contaminated pond bottom sediment	24.35	Horwith
6/3/19	WMNA T864144	705230	Stabilized contaminated pond bottom sediment	22.88	Horwith
6/3/19	WMNA T864145	705242	Stabilized contaminated pond bottom sediment	24.71	Horwith
6/3/19	WMNA T864146	705288	Stabilized contaminated pond bottom sediment	23.44	Horwith
6/3/19	WMNA T864147	705306	Stabilized contaminated pond bottom sediment	21.70	Horwith
6/3/19	WMNA T864148	705395	Stabilized contaminated pond bottom sediment	23.50	Horwith
6/3/19	WMNA T864149	705400	Stabilized contaminated pond bottom sediment	22.40	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
6/5/19	WMNA T864150	706955	Stabilized contaminated pond bottom sediment	22.87	Horwith
6/5/19	WMNA T864151	706936	Stabilized contaminated pond bottom sediment	22.54	Horwith
6/5/19	WMNA T864152	706966	Stabilized contaminated pond bottom sediment	22.53	Horwith
6/5/19	WMNA T864153	706995	Stabilized contaminated pond bottom sediment	19.31	Horwith
6/5/19	WMNA T864154	707099	Stabilized contaminated pond bottom sediment	22.96	Horwith
6/5/19	WMNA T864155	707191	Stabilized contaminated pond bottom sediment	24.43	Horwith
6/5/19	WMNA T864156	707231	Stabilized contaminated pond bottom sediment	25.00	Horwith
6/5/19	WMNA T864157	707250	Stabilized contaminated pond bottom sediment	22.12	Horwith
6/5/19	WMNA T864158	707297	Stabilized contaminated pond bottom sediment	21.04	Horwith
6/5/19	WMNA T864159	707441	Stabilized contaminated pond bottom sediment	25.03	Horwith
6/6/19	WMNA T864160	708041	Stabilized contaminated pond bottom sediment	25.67	Horwith
6/6/19	WMNA T864161	708079	Stabilized contaminated pond bottom sediment	24.57	Horwith
6/6/19	WMNA T864162	708083	Stabilized contaminated pond bottom sediment	22.10	Horwith
6/6/19	WMNA T864163	708103	Stabilized contaminated pond bottom sediment	21.03	Horwith
6/6/19	WMNA T864164	708125	Stabilized contaminated pond bottom sediment	20.70	Horwith
6/6/19	WMNA T864165	708369	Stabilized contaminated pond bottom sediment	22.29	Horwith
6/6/19	WMNA T864166	708413	Stabilized contaminated pond bottom sediment	22.97	Horwith
6/6/19	WMNA T864167	708428	Stabilized contaminated pond bottom sediment	22.32	Horwith
6/6/19	WMNA T864168	708531	Stabilized contaminated pond bottom sediment	19.70	Horwith
6/6/19	WMNA T864169	708544	Stabilized contaminated pond bottom sediment	22.24	Horwith
6/10/19	WMNA T864170	710618	Stabilized contaminated pond bottom sediment	20.63	Horwith
6/10/19	WMNA T864171	710650	Stabilized contaminated pond bottom sediment	21.20	Horwith
6/10/19	WMNA T864172	710660	Stabilized contaminated pond bottom sediment	21.76	Horwith
6/10/19	WMNA T864173	710685	Stabilized contaminated pond bottom sediment	23.31	Horwith
6/10/19	WMNA T864174	710971	Stabilized contaminated pond bottom sediment	21.97	Horwith
6/10/19	WMNA T864175	710985	Stabilized contaminated pond bottom sediment	22.77	Horwith
6/10/19	WMNA T864176	711039	Stabilized contaminated pond bottom sediment	21.16	Horwith
6/10/19	WMNA T864177	711082	Stabilized contaminated pond bottom sediment	23.65	Horwith
6/11/19	WMNA T864178	711678	Stabilized contaminated pond bottom sediment	20.59	Horwith
6/11/19	WMNA T864179	711694	Stabilized contaminated pond bottom sediment	21.52	Horwith
6/11/19	WMNA T864180	711721	Stabilized contaminated pond bottom sediment	23.10	Horwith
6/11/19	WMNA T864181	711974	Stabilized contaminated pond bottom sediment	23.68	Horwith
6/11/19	WMNA T864183	711991	Stabilized contaminated pond bottom sediment	23.15	Horwith
6/11/19	WMNA 8205983	712026	Stabilized contaminated pond bottom sediment	23.14	Horwith
6/12/19	WMNA 8205984	712699	Stabilized contaminated pond bottom sediment	22.07	Horwith
6/12/19	WMNA 8205985	712724	Stabilized contaminated pond bottom sediment	22.24	Horwith
6/12/19	WMNA 8205986	712728	Stabilized contaminated pond bottom sediment	21.17	Horwith
6/12/19	WMNA 8205987	713052	Stabilized contaminated pond bottom sediment	22.84	Horwith
6/12/19	WMNA 8205988	713059	Stabilized contaminated pond bottom sediment	21.76	Horwith
6/12/19	WMNA 8205989	713074	Stabilized contaminated pond bottom sediment	21.80	Horwith
6/13/19	WMNA 8205990	713734	Stabilized contaminated pond bottom sediment	19.29	Horwith
6/13/19	WMNA 8205991	713766	Stabilized contaminated pond bottom sediment	21.37	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
6/13/19	WMNA 8205992	713769	Stabilized contaminated pond bottom sediment	19.49	Caner
6/13/19	WMNA 8205993	713788	Stabilized contaminated pond bottom sediment	23.77	Horwith
6/13/19	WMNA 8205994	713995	Stabilized contaminated pond bottom sediment	21.02	Horwith
6/13/19	WMNA 8205995	714016	Stabilized contaminated pond bottom sediment	21.00	Horwith
6/13/19	WMNA 8205996	714038	Stabilized contaminated pond bottom sediment	19.75	Caner
6/13/19	WMNA 8205997	714059	Stabilized contaminated pond bottom sediment	22.64	Horwith
6/14/19	WMNA 8205998	714750	Stabilized contaminated pond bottom sediment	21.06	Horwith
6/14/19	WMNA 8205999	714772	Stabilized contaminated pond bottom sediment	19.53	Horwith
6/14/19	WMNA 8206000	714800	Stabilized contaminated pond bottom sediment	24.01	Horwith
6/14/19	WMNA 8206001	714822	Stabilized contaminated pond bottom sediment	22.75	Horwith
6/14/19	WMNA 8206002	714843	Stabilized contaminated pond bottom sediment	22.53	Horwith
6/14/19	WMNA 8206003	715143	Stabilized contaminated pond bottom sediment	21.63	Horwith
6/14/19	WMNA 8206004	715145	Stabilized contaminated pond bottom sediment	22.05	Horwith
6/17/19	WMNA 8206005	716228	Stabilized contaminated pond bottom sediment	21.78	Horwith
6/17/19	WMNA 8206006	716231	Stabilized contaminated pond bottom sediment	21.82	Horwith
6/17/19	WMNA 8206007	716234	Stabilized contaminated pond bottom sediment	21.99	Horwith
6/17/19	WMNA 8206008	716454	Stabilized contaminated pond bottom sediment	21.55	Horwith
6/17/19	WMNA 8206009	716634	Stabilized contaminated pond bottom sediment	23.02	Horwith
6/17/19	WMNA 8206010	716658	Stabilized contaminated pond bottom sediment	21.85	Horwith
6/18/19	WMNA 8206011	717207	Stabilized contaminated pond bottom sediment	21.38	Horwith
6/18/19	WMNA 8206012	717221	Stabilized contaminated pond bottom sediment	22.79	Horwith
6/18/19	WMNA 8206013	717238	Stabilized contaminated pond bottom sediment	20.11	Horwith
6/18/19	WMNA 8206014	717535	Stabilized contaminated pond bottom sediment	22.84	Horwith
6/18/19	WMNA 8206015	717560	Stabilized contaminated pond bottom sediment	23.87	Horwith
6/18/19	WMNA 8206016	717576	Stabilized contaminated pond bottom sediment	25.52	Horwith
6/19/19	WMNA 8206017	718218	Stabilized contaminated pond bottom sediment	21.24	Horwith
6/19/19	WMNA 8206018	718228	Stabilized contaminated pond bottom sediment	21.39	Horwith
6/19/19	WMNA 8206019	718245	Stabilized contaminated pond bottom sediment	22.40	Horwith
6/19/19	WMNA 8206020	718268	Stabilized contaminated pond bottom sediment	22.81	Horwith
6/19/19	WMNA 8206021	718287	Stabilized contaminated pond bottom sediment	21.81	Horwith
6/19/19	WMNA 8206022	718511	Stabilized contaminated pond bottom sediment	20.83	Horwith
6/19/19	WMNA 8206023	718545	Stabilized contaminated pond bottom sediment	22.12	Horwith
6/19/19	WMNA 8206024	718553	Stabilized contaminated pond bottom sediment	23.11	Horwith
6/19/19	WMNA 8206025	718637	Stabilized contaminated pond bottom sediment	22.43	Horwith
6/19/19	WMNA 8206026	718656	Stabilized contaminated pond bottom sediment	23.55	Horwith
6/20/19	WMNA 8206027	719122	Stabilized contaminated pond bottom sediment	23.52	Horwith
6/20/19	WMNA 8206028	719150	Stabilized contaminated pond bottom sediment	22.64	Horwith
6/20/19	WMNA 8206029	719195	Stabilized contaminated pond bottom sediment	21.36	Horwith
6/20/19	WMNA 8206030	719408	Stabilized contaminated pond bottom sediment	21.78	Horwith
6/20/19	WMNA 8206031	719544	Stabilized contaminated pond bottom sediment	23.54	Horwith
6/20/19	WMNA 8206032	719567	Stabilized contaminated pond bottom sediment	22.77	Horwith
6/21/19	WMNA 8206033	719990	Stabilized contaminated pond bottom sediment	21.17	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
6/21/19	WMNA 8206034	720006	Stabilized contaminated pond bottom sediment	23.91	Horwith
6/21/19	WMNA 8206035	720030	Stabilized contaminated pond bottom sediment	22.26	Horwith
6/21/19	WMNA 8206036	720256	Stabilized contaminated pond bottom sediment	21.91	Horwith
6/21/19	WMNA 8206037	720281	Stabilized contaminated pond bottom sediment	21.10	Horwith
6/21/19	WMNA 8206038	720299	Stabilized contaminated pond bottom sediment	21.95	Horwith
6/25/19	WMNA 8206039	722294	Stabilized contaminated pond bottom sediment	20.15	Horwith
6/25/19	WMNA 8206040	722291	Stabilized contaminated pond bottom sediment	19.29	Horwith
6/25/19	WMNA 8206041	722298	Stabilized contaminated pond bottom sediment	19.17	Horwith
6/25/19	WMNA 8206042	722311	Stabilized contaminated pond bottom sediment	17.17	Horwith
6/25/19	WMNA 8206043	722331	Stabilized contaminated pond bottom sediment	17.13	Horwith
6/25/19	WMNA 8206044	722347	Stabilized contaminated pond bottom sediment	21.86	Horwith
6/26/19	WMNA 8206045	723308	Stabilized contaminated pond bottom sediment	20.75	Horwith
6/26/19	WMNA 8206046	723311	Stabilized contaminated pond bottom sediment	22.83	Horwith
6/26/19	WMNA 8206047	723347	Stabilized contaminated pond bottom sediment	22.37	Horwith
6/26/19	WMNA 8206048	723584	Stabilized contaminated pond bottom sediment	24.16	Horwith
6/26/19	WMNA 8206049	723598	Stabilized contaminated pond bottom sediment	22.27	Horwith
6/26/19	WMNA 8206050	723605	Stabilized contaminated pond bottom sediment	23.95	Horwith
6/27/19	WMNA 8206051	724316	Stabilized contaminated pond bottom sediment	21.33	Horwith
6/27/19	WMNA 8206052	724318	Stabilized contaminated pond bottom sediment	22.13	Horwith
6/27/19	WMNA 8206053	724327	Stabilized contaminated pond bottom sediment	22.53	Horwith
6/27/19	WMNA 8206054	724340	Stabilized contaminated pond bottom sediment	22.75	Horwith
6/27/19	WMNA 8206055	724353	Stabilized contaminated pond bottom sediment	19.82	Horwith
6/27/19	WMNA 8206056	724626	Stabilized contaminated pond bottom sediment	22.53	Horwith
6/27/19	WMNA 8206057	724639	Stabilized contaminated pond bottom sediment	22.56	Horwith
6/27/19	WMNA 8206058	724647	Stabilized contaminated pond bottom sediment	23.41	Horwith
6/27/19	WMNA 8206059	724714	Stabilized contaminated pond bottom sediment	21.81	Horwith
6/27/19	WMNA 8206060	724727	Stabilized contaminated pond bottom sediment	20.54	Horwith
6/28/19	WMNA 8206061	725187	Stabilized contaminated pond bottom sediment	22.31	Horwith
6/28/19	WMNA 8206062	725200	Stabilized contaminated pond bottom sediment	19.40	Horwith
6/28/19	WMNA 8206063	725327	Stabilized contaminated pond bottom sediment	21.74	Horwith
6/28/19	WMNA 8206064	725355	Stabilized contaminated pond bottom sediment	19.62	Horwith
6/28/19	WMNA 8206065	725390	Stabilized contaminated pond bottom sediment	21.87	Horwith
7/2/19	WMNA 8206066	727701	Stabilized contaminated pond bottom sediment	21.35	Horwith
7/2/19	WMNA 8206067	727730	Stabilized contaminated pond bottom sediment	21.93	Horwith
7/2/19	WMNA 8206068	727754	Stabilized contaminated pond bottom sediment	21.93	Horwith
7/2/19	WMNA 8206069	728128	Stabilized contaminated pond bottom sediment	22.33	Horwith
7/2/19	WMNA 8206070	728143	Stabilized contaminated pond bottom sediment	22.71	Horwith
7/3/19	WMNA 8206071	728762	Stabilized contaminated pond bottom sediment	25.18	Horwith
7/3/19	WMNA 8206072	728767	Stabilized contaminated pond bottom sediment	23.24	Horwith
7/3/19	WMNA 8206073	728773	Stabilized contaminated pond bottom sediment	21.72	Horwith
7/3/19	WMNA 8206074	728785	Stabilized contaminated pond bottom sediment	22.03	Horwith
7/3/19	WMNA 8206075	729137	Stabilized contaminated pond bottom sediment	21.75	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
7/3/19	WMNA 8206076	729136	Stabilized contaminated pond bottom sediment	24.45	Horwith
7/3/19	WMNA 8206077	729160	Stabilized contaminated pond bottom sediment	21.72	Horwith
7/3/19	WMNA 8206078	729168	Stabilized contaminated pond bottom sediment	21.77	Horwith
7/8/19	WMNA 8206079	731197	Stabilized contaminated pond bottom sediment	21.57	Horwith
7/8/19	WMNA 8206080	731222	Stabilized contaminated pond bottom sediment	24.28	Horwith
7/8/19	WMNA 8206081	731230	Stabilized contaminated pond bottom sediment	21.63	Horwith
7/8/19	WMNA 8206082	731242	Stabilized contaminated pond bottom sediment	20.69	Horwith
7/16/19	WMNA 8206083	737904	Stabilized contaminated pond bottom sediment	21.12	Horwith
7/16/19	WMNA 8206084	737915	Stabilized contaminated pond bottom sediment	22.95	Horwith
7/16/19	WMNA 8206085	737924	Stabilized contaminated pond bottom sediment	23.63	Horwith
7/16/19	WMNA 8206086	738239	Stabilized contaminated pond bottom sediment	22.90	Horwith
7/16/19	WMNA 8206087	738272	Stabilized contaminated pond bottom sediment	23.35	Horwith
7/16/19	WMNA 8206088	738280	Stabilized contaminated pond bottom sediment	21.88	Horwith
7/17/19	WMNA 8206089	738973	Stabilized contaminated pond bottom sediment	23.84	Horwith
7/17/19	WMNA 8206090	738996	Stabilized contaminated pond bottom sediment	23.33	Horwith
7/17/19	WMNA 8206091	739011	Stabilized contaminated pond bottom sediment	23.15	Horwith
7/17/19	WMNA 8206092	739032	Stabilized contaminated pond bottom sediment	24.65	Horwith
7/17/19	WMNA 8206093	739034	Stabilized contaminated pond bottom sediment	21.68	Horwith
7/17/19	WMNA 8206094	739315	Stabilized contaminated pond bottom sediment	22.98	Horwith
7/17/19	WMNA 8206095	739317	Stabilized contaminated pond bottom sediment	21.99	Horwith
7/17/19	WMNA 8206096	739338	Stabilized contaminated pond bottom sediment	23.73	Horwith
7/17/19	WMNA 8206097	739348	Stabilized contaminated pond bottom sediment	22.97	Horwith
7/17/19	WMNA 8206098	739359	Stabilized contaminated pond bottom sediment	22.40	Horwith
7/18/19	WMNA 8206099	740006	Stabilized contaminated pond bottom sediment	22.52	Horwith
7/18/19	WMNA 8206100	740271	Stabilized contaminated pond bottom sediment	25.23	Horwith
7/19/19	WMNA 8206101	740996	Stabilized contaminated pond bottom sediment	23.02	Horwith
7/19/19	WMNA 8206102	741020	Stabilized contaminated pond bottom sediment	21.74	Horwith
7/19/19	WMNA 8206103	741022	Stabilized contaminated pond bottom sediment	23.23	Horwith
7/22/19	WMNA 8206104	742324	Stabilized contaminated pond bottom sediment	23.84	Horwith
7/22/19	WMNA 8206105	742339	Stabilized contaminated pond bottom sediment	23.79	Horwith
7/22/19	WMNA 8206106	742625	Stabilized contaminated pond bottom sediment	24.36	Horwith
7/22/19	WMNA 8206107	742639	Stabilized contaminated pond bottom sediment	23.02	Horwith
7/23/19	WMNA 8206108	743522	Stabilized contaminated pond bottom sediment	22.56	Horwith
7/23/19	WMNA 8206109	743519	Stabilized contaminated pond bottom sediment	22.23	Horwith
7/23/19	WMNA 8206110	M13829	Stabilized contaminated pond bottom sediment	19.22	Horwith
7/23/19	WMNA 8206111	743511	Stabilized contaminated pond bottom sediment	20.95	Horwith
7/23/19	WMNA 8206112	743512	Stabilized contaminated pond bottom sediment	21.83	Horwith
7/23/19	WMNA 8206113	743050	Stabilized contaminated pond bottom sediment	23.43	Horwith
7/24/19	WMNA 8206114	743889	Stabilized contaminated pond bottom sediment	22.28	Horwith
7/24/19	WMNA 8206115	743900	Stabilized contaminated pond bottom sediment	22.98	Horwith
7/24/19	WMNA 8206116	743908	Stabilized contaminated pond bottom sediment	22.94	Horwith
7/24/19	WMNA 8206117	744250	Stabilized contaminated pond bottom sediment	22.12	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records  
Woodbridge Pond Remediation  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
7/24/19	WMNA 8206118	744228	Stabilized contaminated pond bottom sediment	21.35	Horwith
7/24/19	WMNA 8206119	744268	Stabilized contaminated pond bottom sediment	22.34	Horwith
7/25/19	WMNA 8206120	744870	Stabilized contaminated pond bottom sediment	21.04	Horwith
7/25/19	WMNA 8206121	744887	Stabilized contaminated pond bottom sediment	20.85	Horwith
7/25/19	WMNA 8206122	744905	Stabilized contaminated pond bottom sediment	20.65	Horwith
7/25/19	WMNA 8206123	744996	Stabilized contaminated pond bottom sediment	21.53	Horwith
7/25/19	WMNA 8206124	745143	Stabilized contaminated pond bottom sediment	21.80	Horwith
7/25/19	WMNA 8206125	745173	Stabilized contaminated pond bottom sediment	17.93	Horwith
7/25/19	WMNA 8206126	745210	Stabilized contaminated pond bottom sediment	22.16	Horwith
7/25/19	WMNA 8206127	745330	Stabilized contaminated pond bottom sediment	19.84	Horwith
7/26/19	WMNA 8206128	745923	Stabilized contaminated pond bottom sediment	22.86	Horwith
7/26/19	WMNA 8206129	745917	Stabilized contaminated pond bottom sediment	21.58	Horwith
7/26/19	WMNA 8206130	745935	Stabilized contaminated pond bottom sediment	21.47	Horwith
7/26/19	WMNA 8206131	745950	Stabilized contaminated pond bottom sediment	22.30	Horwith
7/26/19	WMNA 8206132	745960	Stabilized contaminated pond bottom sediment	23.01	Horwith
7/26/19	WMNA 8206133	746175	Stabilized contaminated pond bottom sediment	21.58	Horwith
7/26/19	WMNA 8206134	746192	Stabilized contaminated pond bottom sediment	24.29	Horwith
7/26/19	WMNA 8206135	746223	Stabilized contaminated pond bottom sediment	23.91	Horwith
7/26/19	WMNA 8206136	746228	Stabilized contaminated pond bottom sediment	22.00	Horwith
7/26/19	WMNA 8206137	746295	Stabilized contaminated pond bottom sediment	20.99	Horwith
7/29/19	WMNA 8206138	747238	Debris from vegetation removal	7.05	Horwith
7/29/19	WMNA 8206139	747260	Debris from vegetation removal	6.88	Horwith
7/29/19	WMNA 8206140	747271	Debris from vegetation removal	7.09	Horwith
7/29/19	WMNA 8206141	747299	Debris from vegetation removal	5.65	Horwith
7/29/19	WMNA 8206142	747359	Debris from vegetation removal	7.58	Horwith
7/29/19	WMNA 8206143	747382	Debris from vegetation removal	11.97	Horwith
7/30/19	WMNA 8206144	748166	Stabilized contaminated pond bottom sediment	21.69	Horwith
7/30/19	WMNA 8206145	748176	Stabilized contaminated pond bottom sediment	23.81	Horwith
7/30/19	WMNA 8206146	748183	Stabilized contaminated pond bottom sediment	21.59	Horwith
7/30/19	WMNA 8206147	748410	Stabilized contaminated pond bottom sediment	23.51	Horwith
7/30/19	WMNA 8206148	748419	Stabilized contaminated pond bottom sediment	23.27	Horwith
7/30/19	WMNA 8206149	748445	Stabilized contaminated pond bottom sediment	24.19	Horwith
7/30/19	WMNA 8206150	748650	Stabilized contaminated pond bottom sediment	23.90	Horwith
7/30/19	WMNA 8206151	748670	Stabilized contaminated pond bottom sediment	23.71	Horwith
7/30/19	WMNA 8206152	748675	Stabilized contaminated pond bottom sediment	22.70	Horwith
7/31/19	WMNA 8206153	749086	Stabilized contaminated pond bottom sediment	21.93	Horwith
7/31/19	WMNA 8206154	749352	Stabilized contaminated pond bottom sediment	22.16	Horwith
7/31/19	WMNA 8206155	M13839	Stabilized contaminated pond bottom sediment	23.04	Horwith
8/1/19	WMNA 8206156	M13661	Stabilized contaminated pond bottom sediment	25.61	Horwith
8/1/19	WMNA 8206157	750293	Stabilized contaminated pond bottom sediment	27.34	Horwith
8/1/19	WMNA 8206158	750568	Stabilized contaminated pond bottom sediment	20.26	Horwith
8/2/19	WMNA 8206159	751012	Stabilized contaminated pond bottom sediment	22.34	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records**  
**Woodbridge Pond Remediation**  
**Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
8/2/19	WMNA 8206160	751378	Stabilized contaminated pond bottom sediment	22.73	Horwith
8/13/19	WMNA T877316	758804	Stabilized contaminated pond bottom sediment	22.03	Horwith
8/13/19	WMNA T877317	759082	Stabilized contaminated pond bottom sediment	21.19	Horwith
8/26/19	WMNA T877318	768311	Surface fill from temporary staging and processing area	20.57	Caner
8/26/19	WMNA T877319	768325	Surface fill from temporary staging and processing area	25.12	Caner
8/26/19	WMNA T877320	768533	Surface fill from temporary staging and processing area	21.78	Caner
8/26/19	WMNA T877321	768552	Surface fill from temporary staging and processing area	21.59	Caner
8/26/19	WMNA T877322	768799	Surface fill from temporary staging and processing area	23.62	Caner
8/26/19	WMNA T877323	768812	Surface fill from temporary staging and processing area	25.79	Caner
8/27/19	WMNA T877324	769524	Surface fill from temporary staging and processing area	21.81	Horwith
8/27/19	WMNA T877325	769541	Surface fill from temporary staging and processing area	21.32	Horwith
8/27/19	WMNA T877326	769627	Surface fill from temporary staging and processing area	21.09	Horwith
8/28/19	WMNA T877327	770237	Surface fill from temporary staging and processing area	22.49	Horwith
8/28/19	WMNA T877328	770247	Surface fill from temporary staging and processing area	21.51	Horwith
8/28/19	WMNA T877329	770363	Surface fill from temporary staging and processing area	23.59	Horwith
8/28/19	WMNA T877330	770586	Surface fill from temporary staging and processing area	24.32	Horwith
8/28/19	WMNA T877331	770601	Surface fill from temporary staging and processing area	23.63	Horwith
8/28/19	WMNA T877332	770706	Surface fill from temporary staging and processing area	23.90	Horwith
8/28/19	WMNA T877333	770856	Surface fill from temporary staging and processing area	23.10	Horwith
8/29/19	WMNA T877334	771232	Surface fill from temporary staging and processing area	13.32	Horwith
9/9/19	WMNA T877335	779045	Timber crane mats	10.27	Horwith
9/9/19	WMNA T877336	779039	Timber crane mats	9.51	Horwith
9/9/19	WMNA T877337	778929	Timber crane mats	9.83	Horwith
9/9/19	WMNA T877338	778933	Timber crane mats	9.41	Horwith
9/11/19	WMNA T877339	780448	Excess clean fill from temporary staging and processing area	22.23	Horwith
9/11/19	WMNA T877340	780446	Excess clean fill from temporary staging and processing area	24.14	Horwith
9/11/19	WMNA T877341	780457	Excess clean fill from temporary staging and processing area	26.33	Caner
9/11/19	WMNA T877342	780706	Excess clean fill from temporary staging and processing area	24.00	Horwith
9/11/19	WMNA T877343	780713	Excess clean fill from temporary staging and processing area	25.83	Horwith
9/11/19	WMNA T877344	780794	Excess clean fill from temporary staging and processing area	26.00	Caner
9/11/19	WMNA T877345	780982	Excess clean fill from temporary staging and processing area	25.37	Horwith
9/11/19	WMNA T877346	780984	Excess clean fill from temporary staging and processing area	24.46	Horwith
9/11/19	WMNA T877347	781026	Excess clean fill from temporary staging and processing area	23.94	Caner
9/12/19	WMNA T877348	781476	Excess clean fill from temporary staging and processing area	23.83	Horwith
9/12/19	WMNA T877349	781492	Excess clean fill from temporary staging and processing area	22.51	Horwith
9/12/19	WMNA T877350	781501	Excess clean fill from temporary staging and processing area	22.45	Horwith
9/12/19	WMNA T877351	781530	Excess clean fill from temporary staging and processing area	21.43	Horwith
9/12/19	WMNA T877352	781542	Excess clean fill from temporary staging and processing area	23.95	Horwith
9/12/19	WMNA T877353	781601	Excess clean fill from temporary staging and processing area	23.81	Horwith
9/13/19	WMNA T877354	782499	Excess clean fill from temporary staging and processing area	25.19	Horwith
9/13/19	WMNA T877355	782536	Excess clean fill from temporary staging and processing area	24.11	Horwith
9/13/19	WMNA T877356	782746	Excess clean fill from temporary staging and processing area	23.58	Horwith



**Table 5-4 Non-Hazardous Solid Waste Disposal Records**  
**Woodbridge Pond Remediation**  
**Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Weight Ticket No.</b>	<b>Source</b>	<b>Quantity (tons)</b>	<b>Transporter</b>
9/13/19	WMNA T877357	783001	Excess clean fill from temporary staging and processing area	10.27	Horwith

Notes:

Horwith: Horwith Trucks, Inc. (EPA ID Number PAD146714878). Also identified as All Image and LV.Co.

J&D: J&D Trucking, Inc. Vineland, New Jersey (EPA ID Number NJR000029967)

Caner: Caner Transportation, LLC. Moorestown, New Jersey (DOT Number 823344)



**Table 5-5 PCB Remediation Waste Disposal Records  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Out of Service Date	Date Shipped	Manifest No.	Container Type	Container ID	Quantity (kilograms)
7/8/2019	7/10/2019	20236738JJJ	Dump Truck Transfer to Rail Car	FURX322361	23,142
7/8/2019	7/10/2019	20236739JJJ			22,235
7/8/2019	7/10/2019	20236740JJJ			22,580
7/8/2019	7/10/2019	20236741JJJ			23,732
7/9/2019	7/11/2019	20236742JJJ	Dump Truck Transfer to Rail Car	MBKX287016	22,725
7/9/2019	7/11/2019	20236743JJJ			24,385
7/9/2019	7/11/2019	20236744JJJ			25,011
7/9/2019	7/11/2019	20236745JJJ			23,097
7/10/2019	7/11/2019	20236746JJJ	Dump Truck Transfer to Rail Car	GACX9583	24,158
7/10/2019	7/11/2019	20236747JJJ			24,748
7/10/2019	7/11/2019	20236748JJJ			24,113
7/10/2019	7/11/2019	20236749JJJ			23,913
7/11/2019	7/12/2019	20236750JJJ	Dump Truck Transfer to Rail Car	NRLX527639	22,271
7/11/2019	7/12/2019	20236751JJJ			23,668
7/11/2019	7/12/2019	20236752JJJ			23,614
7/11/2019	7/12/2019	20236753JJJ			25,256
7/12/2019	7/15/2019	20236754JJJ	Dump Truck Transfer to Rail Car	FURX322375	23,505
7/12/2019	7/15/2019	20236755JJJ			25,592
7/12/2019	7/15/2019	20236756JJJ			25,510
7/12/2019	7/15/2019	20236757JJJ			21,019
7/12/2019	7/16/2019	20236758JJJ	Dump Truck Transfer to Rail Car	FURX322396	24,086
7/12/2019	7/16/2019	20236759JJJ			23,433
7/12/2019	7/16/2019	20236760JJJ			22,897
7/12/2019	7/16/2019	20236761JJJ			22,897
7/12/2019	7/17/2019	20236762JJJ	Dump Truck Transfer to Rail Car	FURX322487	22,643
7/12/2019	7/17/2019	20236763JJJ			25,129
7/12/2019	7/17/2019	20236764JJJ			16,565
7/23/2019	8/2/2019	12251913FLE	55-gallon drum	1120	350
7/23/2019			55-gallon drum	1121	350
7/23/2019			55-gallon drum	1122	350
7/23/2019			55-gallon drum	1123	350

Notes:

Transportation from site to transfer provided by Horwith Trucking. Rail transportation provided by CSX.

Transportation for the shipment under manifest 12251913FLE was provided by EQ Northeast.



**Table 5-6 Non-Hazardous Liquid Waste Disposal Records  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

<b>Date Shipped</b>	<b>Manifest No.</b>	<b>Quantity (gallons)</b>
5/20/2019	168567	6,142
5/22/2019	168614	6,210
5/29/2019	168611	5,079
5/30/2019	168855	6,142
6/3/2019	168973	6,142
6/4/2019	168999	6,142
6/4/2019	169003	6,210
6/5/2019	169017	6,142
6/5/2019	169033	6,210
6/5/2019	169041	5,496
6/6/2019	169075	6,142
6/10/2019	169169	5,633
6/10/2019	169171	5,450
6/12/2019	169259	6,334
6/12/2019	169265	5,904
6/13/2019	169274	6,210
6/17/2019	169370	5,626
6/17/2019	169376	5,989
6/24/2019	169565	5,904
6/25/2019	169596	6,300
6/26/2019	169646	6,274
7/1/2019	169756	5,474
7/8/2019	169910	5,500
7/10/2019	169981	6,142
7/19/2019	170231	5,506
7/24/2019	170386	6,271
7/29/2019	170512	6,068
7/30/2019	170534	6,210
8/5/2019	170683	6,271
8/5/2019	170694	6,271
8/9/2019	170847	6,068
8/13/2019	170902	5,503
8/14/2019	170925	2,353
8/30/2019	171307	1,387

Notes:

Material Shipped: Filtered or untreated wastewater characterized as non-hazardous

Destination: Clean Water of New York, Inc., 3249 Richmond Terrace, Staten Island, NY 10303 (EPA ID: NY0000968545)



**Table 8-1 Daily Dredging Progress**  
**Woodbridge Pond Remediation Project**  
**Woodbridge, New Jersey**

Date	Area	Surface Area (SF)	Volume (CY)	Comment
4/23/19	Access Channel	1,622.96	192.96	Total includes initial dredging on April 22, 2019
4/24/19	Access Channel	623.61	60.30	
4/25/19	Access Channel	385.05	40.20	
4/26/19	Access Channel	1,020.71	108.54	
4/29/19	Pond <50	1,706.20	63.65	
4/30/19	Pond <50	1,880.05	106.09	
5/1/19	Pond <50	1,634.67	113.38	
5/2/19	Pond <50	1,285.92	94.43	
5/3/19	Pond <50	525.23	41.95	
5/6/19	Pond <50	2,486.26	191.64	
5/7/19	Pond <50	2,394.93	196.07	
5/8/19	Pond <50	1,847.28	133.63	
5/9/19	Pond <50	2,552.96	218.56	
5/10/19	Pond <50	1,283.72	121.01	
5/13/19	Pond <50	2,081.44	100.76	
5/14/19	Pond <50	2,395.84	128.82	
5/15/19	Pond <50	2,274.14	111.64	
5/16/19	Pond <50	578.37	51.78	
5/17/19	Pond <50	666.73	44.20	
5/20/19	Pond <50	2,307.68	135.84	
5/21/19	Pond <50	1,943.65	157.14	
5/22/19	Pond <50	1,708.05	132.79	
5/23/19	Pond <50	853.02	90.31	
5/24/19	Pond <50	1,145.00	107.82	
5/28/19	Pond <50	2,194.15	198.57	
5/29/19	Pond <50	587.90	62.65	
5/30/19	Pond <50	1,769.36	179.01	
5/31/19	Pond <50	2,312.20	202.75	
6/3/19	Pond <50	1,783.19	163.51	
6/4/19	Pond <50	2,392.20	158.20	
6/5/19	Pond <50	1,478.34	138.42	
6/6/19	Pond <50	2,344.02	203.16	
6/7/19	Pond <50	498.47	61.27	
6/10/19	Pond <50	1,265.77	129.53	
6/11/19	Pond <50	1,990.74	209.87	
6/12/19	Pond <50	1,225.12	108.38	
6/13/19	Pond <50	686.54	93.83	
6/14/19	Northern Wetlands	258.47	24.61	
6/17/19	Northern Wetlands	1,059.19	105.92	
6/18/19	Northern Wetlands	502.96	48.95	
6/19/19	Northern Wetlands	1,319.25	138.64	
6/20/19	Northern Wetlands	568.15	60.22	
6/21/19	Northern Wetlands	182.93	13.55	
6/24/19	Northern Wetlands	152.35	8.30	
6/24/19	Redig	2,435.17	138.00	
6/25/19	Northern Wetlands	74.30	0.54	
6/25/19	Redig	2,585.98	109.00	
6/26/19	Pond <50	484.15	42.19	
6/26/19	Redig	1,624.66	69.00	
6/27/19	Pond <50	347.63	25.37	
6/28/19	Pond <50	157.66	14.34	No progress drawing available. Quantity from 7/8 report
6/28/19	Redig	381.50	40.00	



**Table 8-1 Daily Dredging Progress  
Woodbridge Pond Remediation Project  
Woodbridge, New Jersey**

Date	Area	Surface Area (SF)	Volume (CY)	Comment
7/1/19	Pond <50	172.23	20.87	
7/1/19	Redig	1,358.16	60.00	
7/2/19	Redig	837.60	103.00	
7/3/19	Redig	25.74	1.50	Volume miscalculated on progress drawing
7/8/19	PCB RW	1,192.50	137.58	
7/9/19	PCB RW	552.99	63.45	
7/10/19	PCB RW	861.32	114.61	
7/11/19	PCB RW	346.59	64.88	
7/12/19	Redig	937.77	31.00	
7/12/19	PCB RW	N/A	47.69	
7/15/19	Northern Wetlands	1,238.32	157.33	
7/16/19	Northern Wetlands	956.55	108.58	
7/17/19	Northern Wetlands	248.77	33.04	
7/18/19	Northern Wetlands	N/A	68.29	No progress drawing available. Quantity from daily progress report.
7/19/19	Northern Wetlands	N/A	46.81	No progress drawing available. Quantity from daily progress report.
7/22/19	Northern Wetlands	N/A	105.18	No progress drawing available. Quantity from daily progress report.
7/23/19	Northern Wetlands	1,177.85	127.67	
7/24/19	Northern Wetlands	943.02	129.67	
7/25/19	Northern Wetlands	1,659.24	111.05	
7/26/19	Northern Wetlands	195.97	56.58	Partial redig
8/1/19	Northern Wetlands	609.92	73.14	Partial redig
		Total	7,153.21	

Summary of Excavation Quantities

Contaminated Sediment <50 mg/kg PCBs	6,323.00 CY
Pond <50	4,353.43 CY
Redig	551.50 CY
Northern Wetlands	1,418.07 CY
PCB Remediation Waste >50 mg/kg PCBs	428.21 CY
PCB RW	428.21 CY
Uncontaminated Sediment	402.00 CY
Access Channel	402.00 CY

Notes:

All quantities are approximate based on data reported by GPS system used to guide dredging. As-built drawings present the final surveyed limits of the remediation.

N/A: Surface area not available.

SF: Square feet

CY: Cubic yards

Pond<50: Area of pond bottom material containing less than 50 mg/kg PCBs based on in-situ samples.

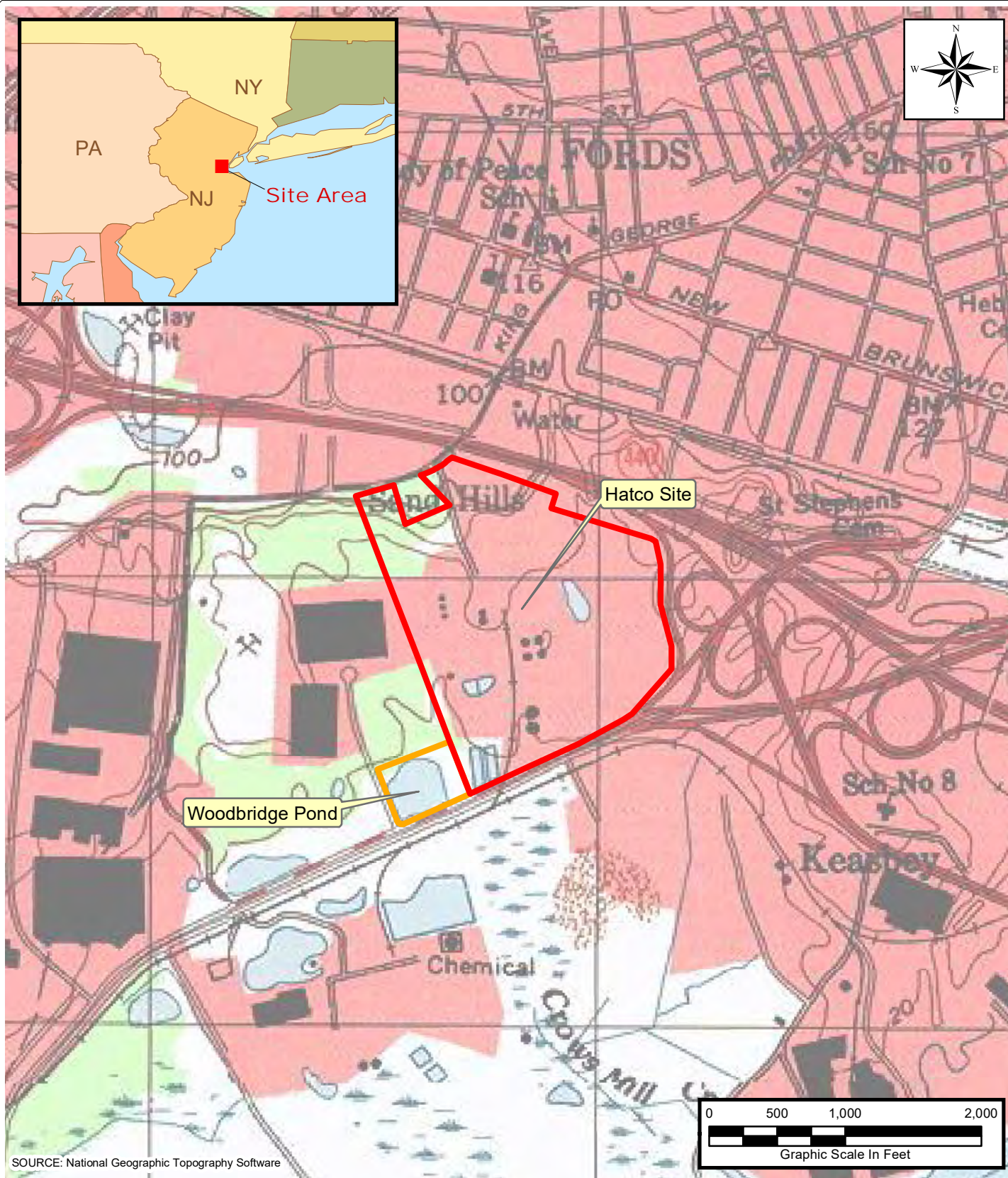
Redig: Area re-excavated due to exceedance reported in verification sample.

PCB RW: PCB Remediation waste area. Area of pond bottom material containing 50 mg/kg or greater PCBs based on in-situ samples.

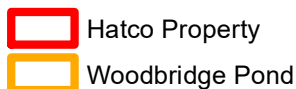


## Figures





LEGEND:



PROJECT:

Woodbridge Pond Remedial Action Report

CLIENT NAME:

Hatco Corporation

TITLE:

## Hatco Site Location Map



DATE:

January 2019

FIGURE #:

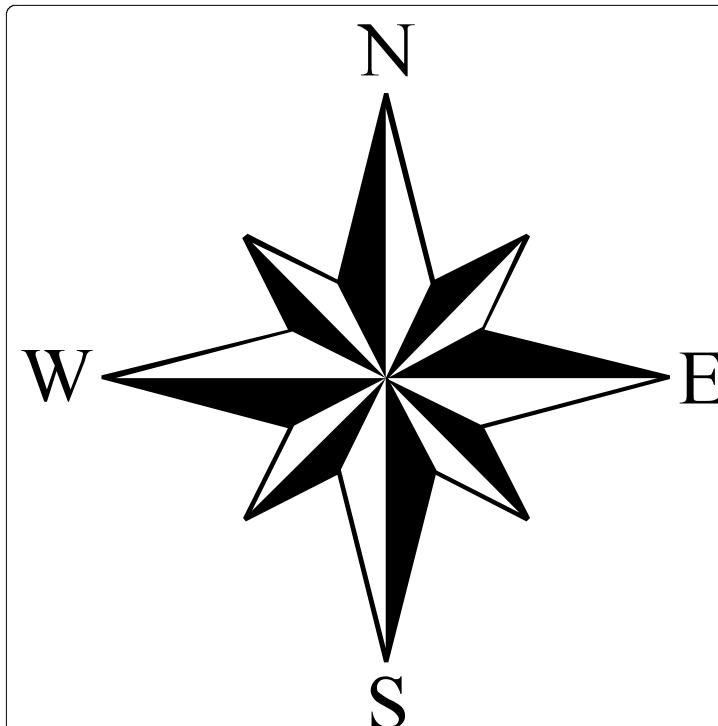
1-1





Weston Solutions, Inc.

205 Campus Drive Edison, New Jersey 08837-3939  
TEL: (732) 417-5800 Fax: (732) 417-5801  
<http://www.westonsolutions.com>



REPORT DATE:  
January 2020

DRAWING:  
24517\_Areas\_of\_Concern.mxd  
PATH:  
P:\Hato\GIS\MXD\2019\_10\_WP\_RAR\

REVISION No.  
0

WORK ORDER No.  
13067.001.004.6007

PROJECT MANAGER:  
J. Schindler

CHECKED BY:  
A. McGahan

CONTRACT No.  
DELIVERY ORDER No.

DRAWN/MODIFIED BY:  
H. Bravo-Ruiz  
DATE CREATED:  
10/25/2019

CLIENT NAME:  
Hatco Corporation

PROJECT NAME:  
Woodbridge Pond  
Remedial Action Report

DRAWING TITLE:  
SITE MAP AND  
AREAS OF CONCERN

FIGURE: 1-2 SCALE: 1" = 80' DATE: 6/2/2020





SCALE: 0 125 250 500 Feet

PROJECT: Woodbridge Pond Remedial Action Report

CLIENT NAME: Hatco Corporation

TITLE: TAX LOTS AND BLOCKS

DRAWING NUMBER: FIGURE #: 1-3

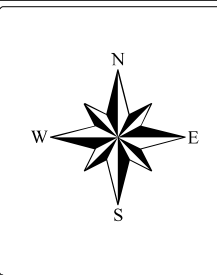
DRAWN BY: H. Bravo-Ruiz

REVIEWED BY: A. McGahan

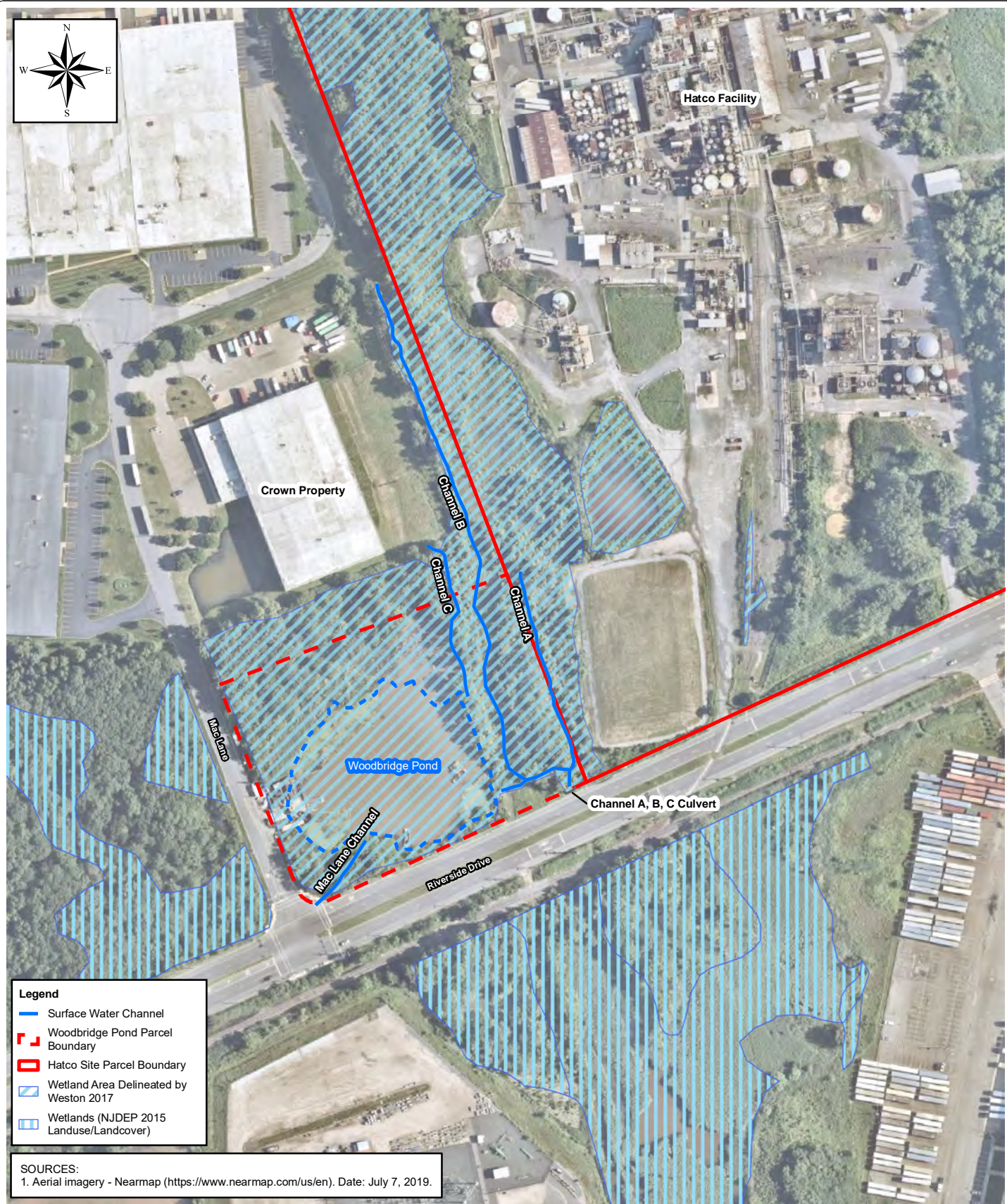
PROJECT MANAGER: J. Schindler

SCALE: 1" = 250'

DATE: January 2019







TITLE:

## Wetlands and Surface Water Map

PROJECT: Woodbridge Pond Remedial Action Report

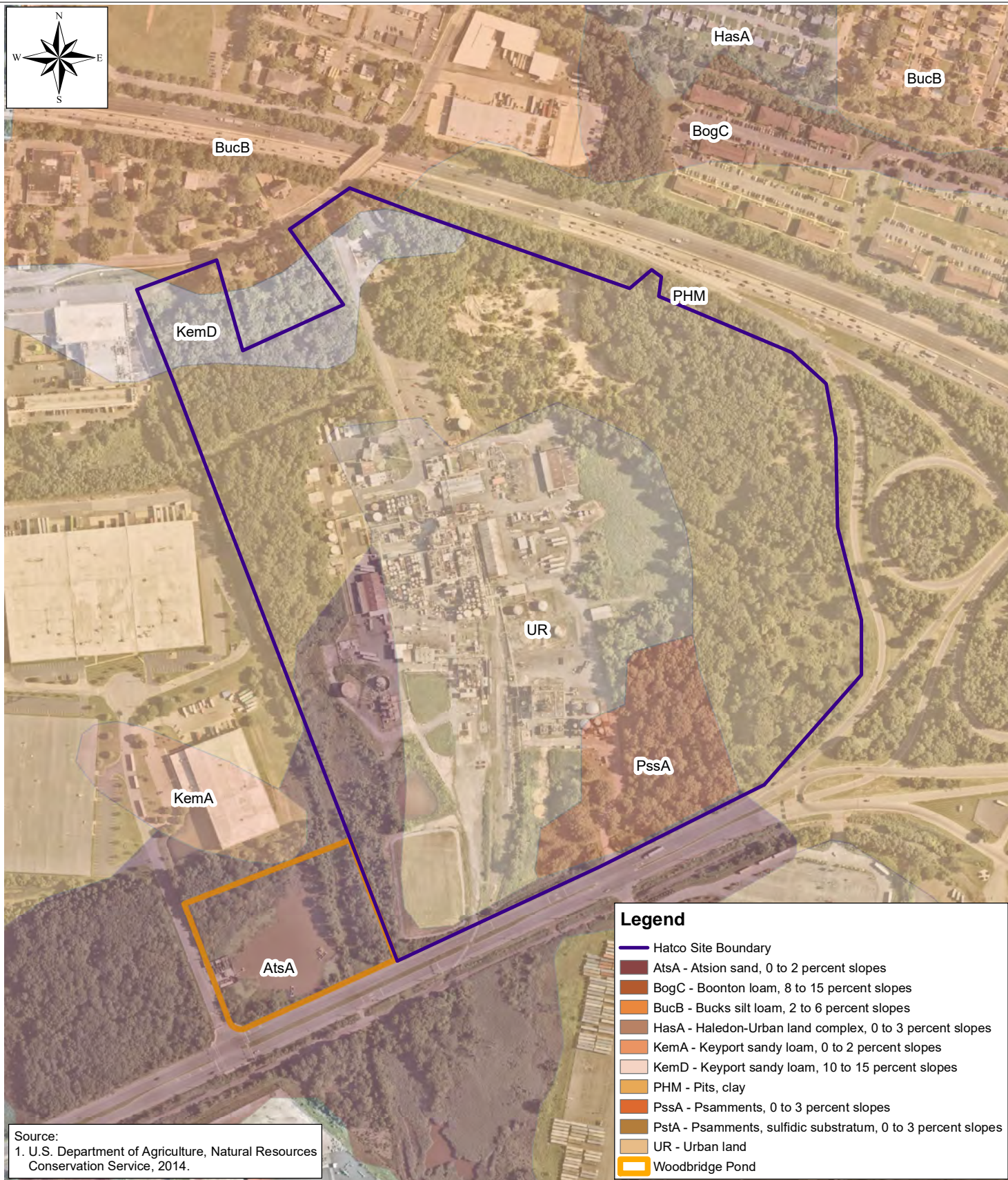
CLIENT NAME: Hatco Corporation



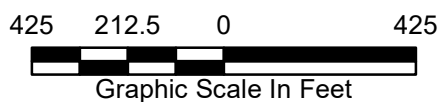
DATE: January 2019

FIGURE #: 2-1





LEGEND:



TITLE:

## Soil Survey Map

PROJECT:

Woodbridge Pond  
Remedial Action Report

CLIENT NAME:

Hatco Corporation



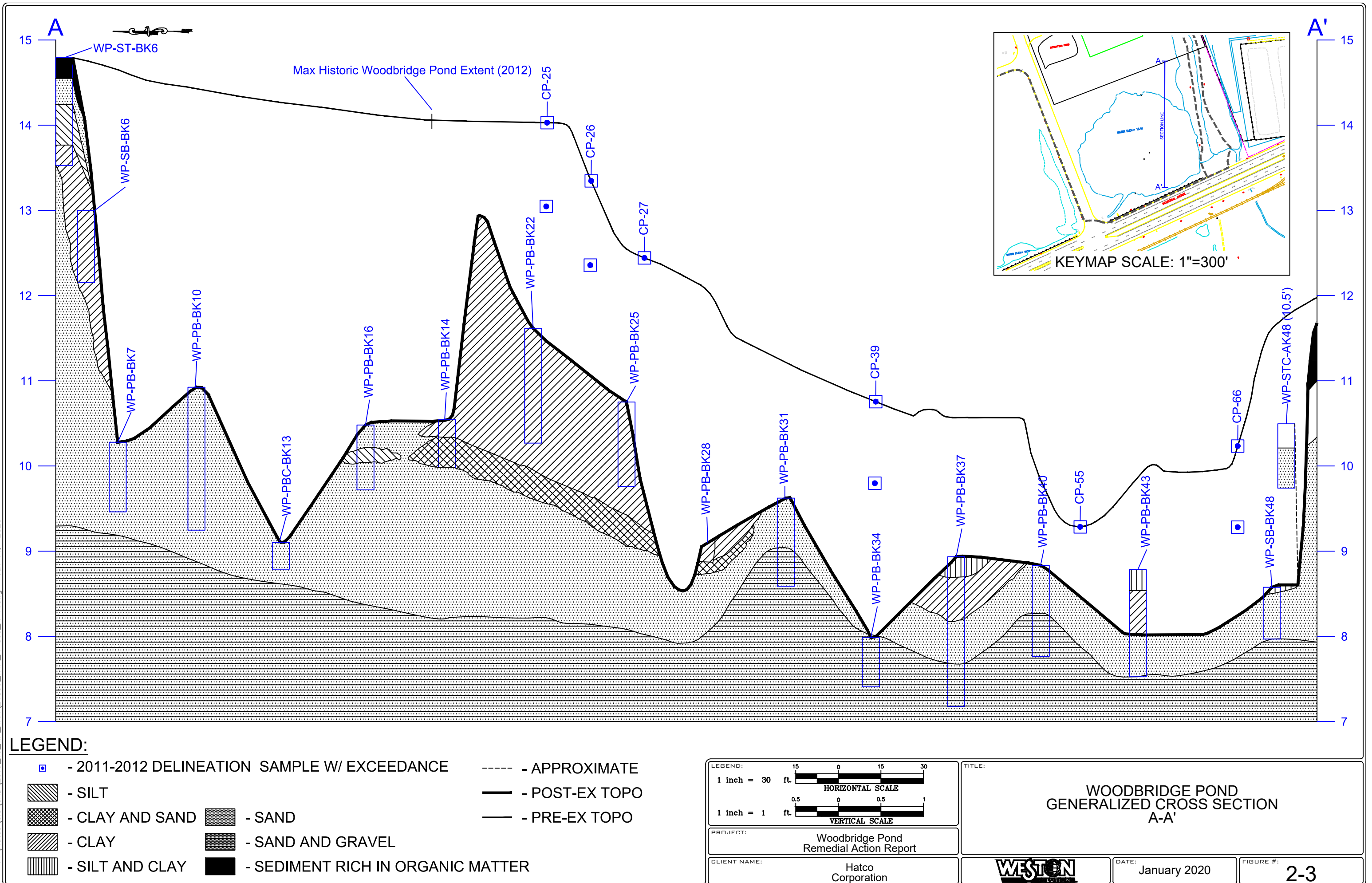
DATE:

November 2019

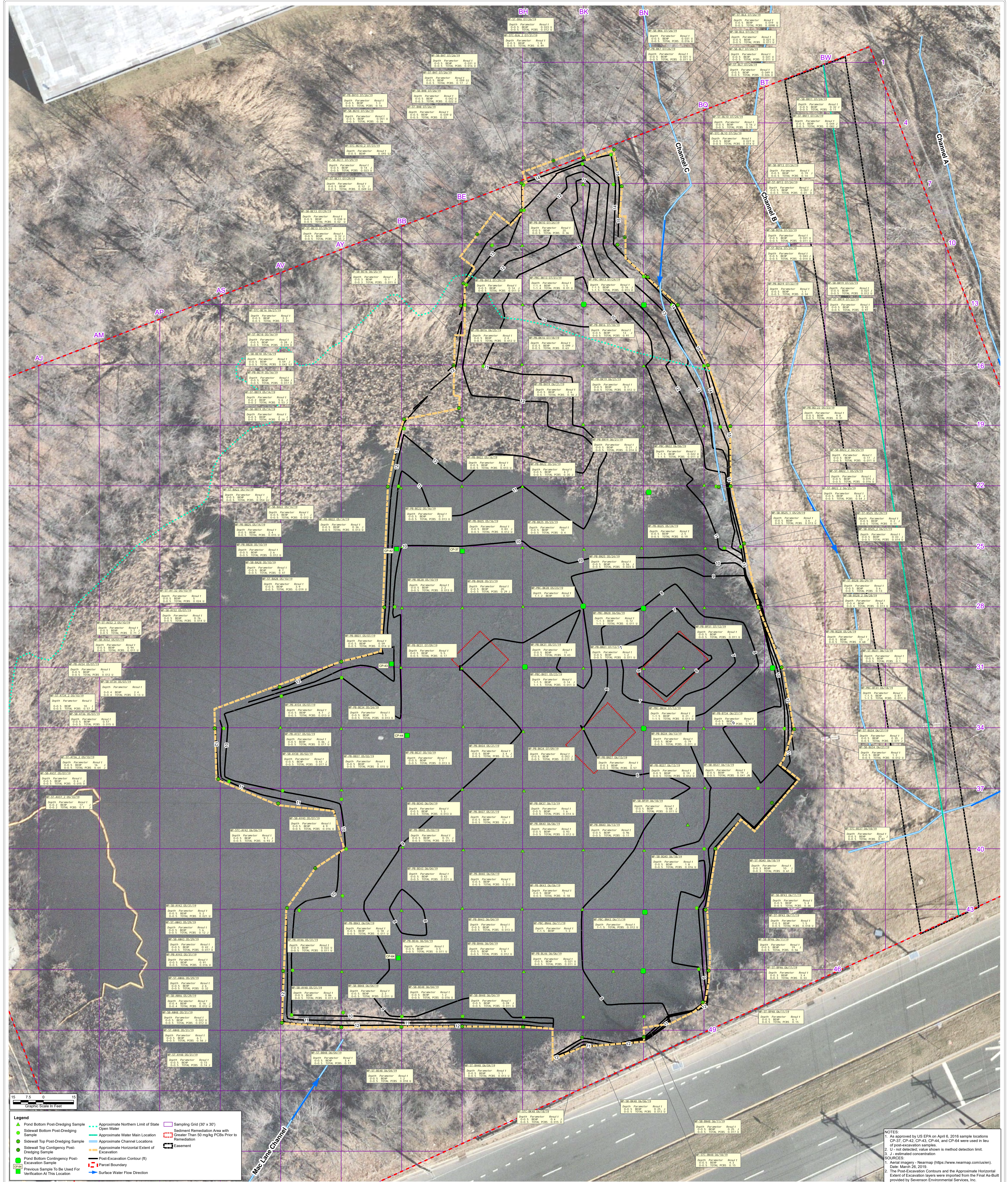
FIGURE #:

2-3







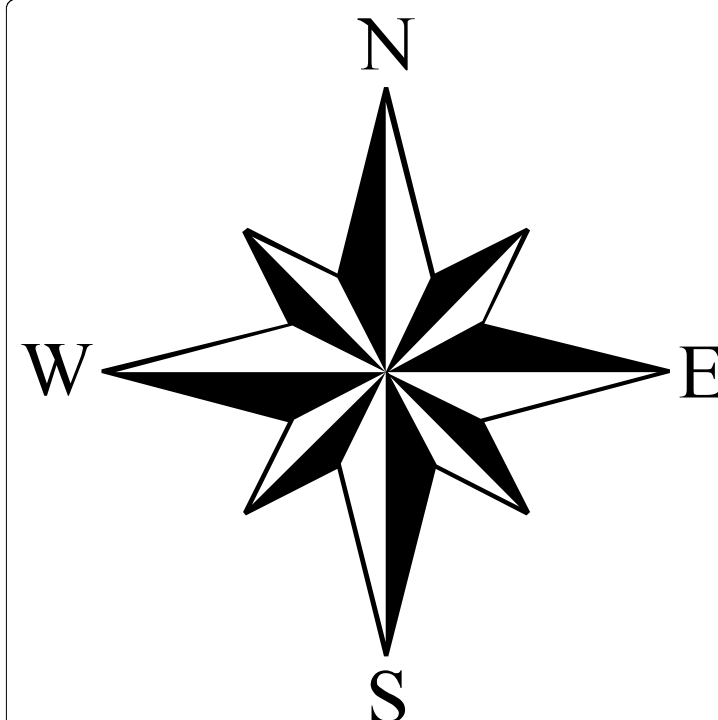


NOTES:  
1. As approved by US EPA on April 6, 2016 sample locations CP-37, CP-42, CP-44, and CP-54 were used in lieu of post-excavation samples.  
2. U = not detected, value shown is method detection limit.  
3. U = estimated concentration  
SOURCES:  
1. Aerial Imagery - Neamap (<https://www.neamap.com/us/en>).  
2. The Post-Excavation Contours and the Approximate Horizontal Extent of Excavation layers were imported from the Final As-Built provided by Severson Environmental Services, Inc.



Weston Solutions, Inc.

205 Campus Drive Edison, New Jersey 08837-3939  
TEL: (732) 417-5800 Fax: (732) 417-5801  
<http://www.westonsolutions.com>



REPORT DATE:  
May 2020

DRAWING:  
24881\_WWP\_Final\_EIA\_Sampling.mxd

PATH:  
P:\ASAC\GIS\MSX\2019\_10\_WP\_RAR\

REVISION No.  
0

WORK ORDER No.  
13067.001.004.6007

PROJECT MANAGER:  
J. Schindler

CHECKED BY:  
A. McGahan

CONTRACT No.  
DELIVERY ORDER NO.

DRAWN/HYD BY:  
M. Bravo-Ruiz

DATE CREATED:  
5/8/2020

CLIENT NAME:

Hatco Corporation

PROJECT NAME:

Woodbridge Pond  
Remediation Action Report

DRAWING TITLE:

Woodbridge Pond Post-Excavation  
Sediment Samples

FIGURE:

5-1

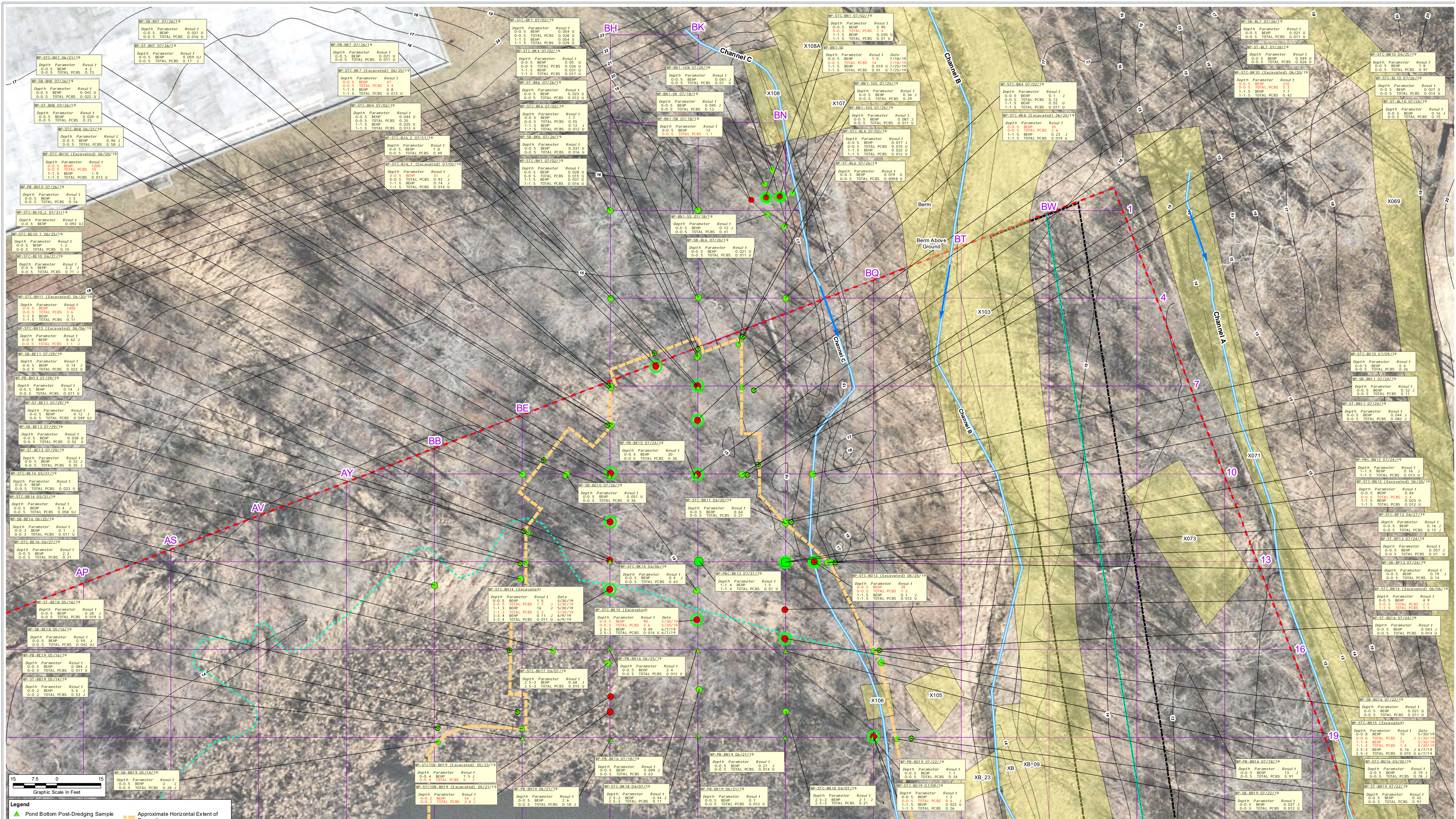
SCALE:

1" = 15'

DATE:

5/8/2020

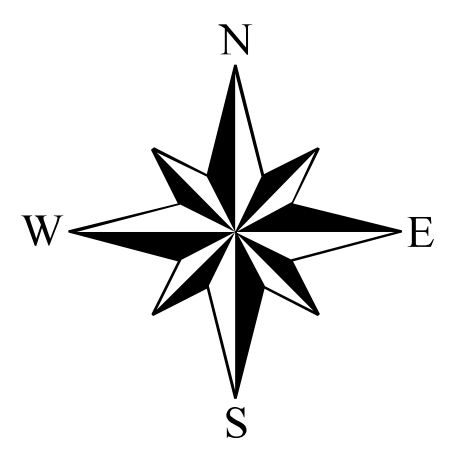




- Legend**
- ▲ Pond Bottom Post-Dredging Sample
  - Sidewall Bottom Post-Dredging Sample
  - Sidewall Top Post-Dredging Sample
  - Sidewall Top Contingency Post-Dredging Sample
  - Pond Bottom Contingency Post-Excavation Sample
  - Delineation Sample Location with Exceedance(s)
  - Delineation Sample Location with no Exceedance(s)
  - Vertically Delineated
  - Approximate Horizontal Extent of Excavation
  - Approximate Northern Limit of State Open Water
  - Approximate Water Main Location
  - Approximate Channel Locations
  - Excavated
  - Parcel Boundary
  - Sampling Grid (30' x 30')
  - Easement
  - Contours (ft)

NOTES:  
1. U = not detected, value shown is method detection limit.  
2. J = estimated concentration.  
SOURCES:  
1. Aerial imagery - Nearmap (<https://www.nearmap.com/us/en>).  
Date: March 26, 2019.

**WESTON SOLUTIONS**  
Weston Solutions, Inc.  
205 Campus Drive Edison, New Jersey 08839-3399  
TEL: (732) 417-5800 Fax: (732) 417-5801  
<http://www.westonsolutions.com>



REPORT DATE:  
January 2020

DRAWING:  
2020\_WP\_North\_Dike\_Sampling\_R.mxd

REVISION No:  
0

WORK ORDER No:  
13067.001.004.6007

PROJECT MANAGER:  
J. Schindler

CHECKED BY:  
A. McGahan

CONTRACT No:  
DELIVERY ORDER No.

DRAWN/MODIFIED BY:  
H. Bravo-Ruiz

DATE CREATED:  
11/04/2019

CLIENT NAME:  
Hatco Corporation

PROJECT NAME:  
Woodbridge Pond  
Remedial Action Report

DRAWING TITLE:  
Woodbridge Pond Northern  
Sediment Delineation Samples

FIGURE:  
5-2

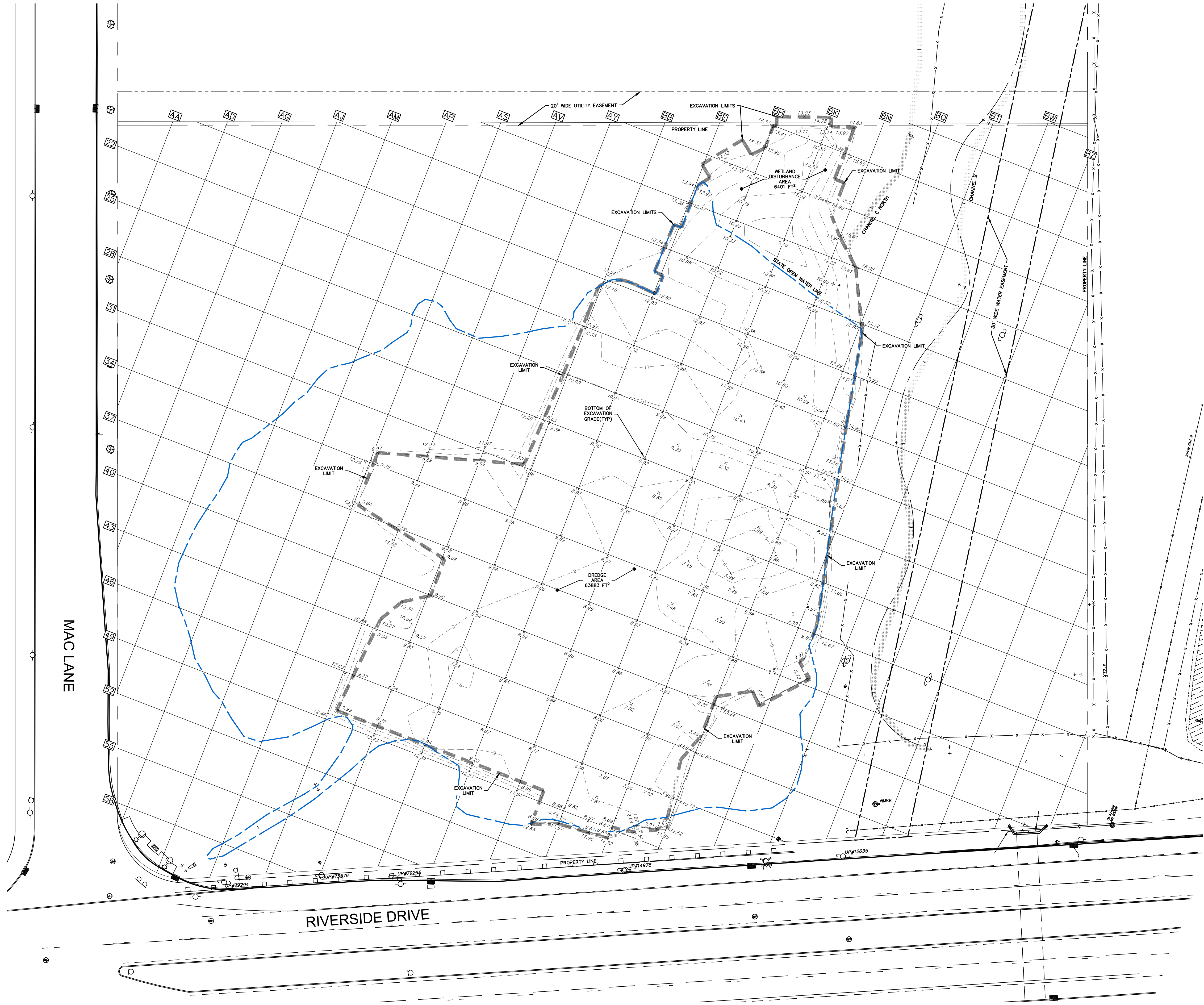
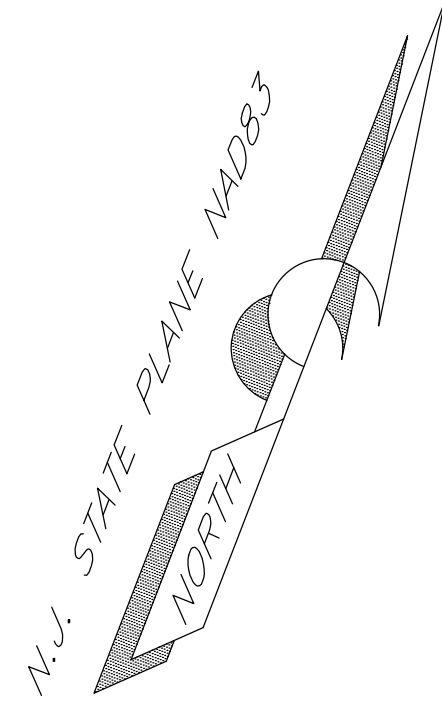
SCALE:  
1 in = 15 ft

DATE:  
3/23/2020



**Appendix M**  
**As-Built Drawings**





VICINITY MAP  
(NOT TO SCALE)

NOTES

1. BOUNDARY INFORMATION SHOWN HEREON FROM PLANS ENTITLED "WOODBIDGE POND REMEDIATION CONSTRUCTION" HATCO CORPORATION SITE, WOODBRIDGE TOWNSHIP, NEW JERSEY, OCTOBER 2018. PREPARED BY WESTON SOLUTIONS.
2. TOPOGRAPHIC INFORMATION SHOWN HERE ON FIRM ACTUAL FIELD LOCATIONS PERFORMED BY THIS FIRM THROUGH 08/05/19 AND CONTRACTOR'S NOTES.
3. NEW JERSEY STATE PLANE COORDINATES (NAD83 - HORIZONTAL, AND NAVD88-2011) ESTABLISHED FROM RTK GPS OBSERVATIONS.

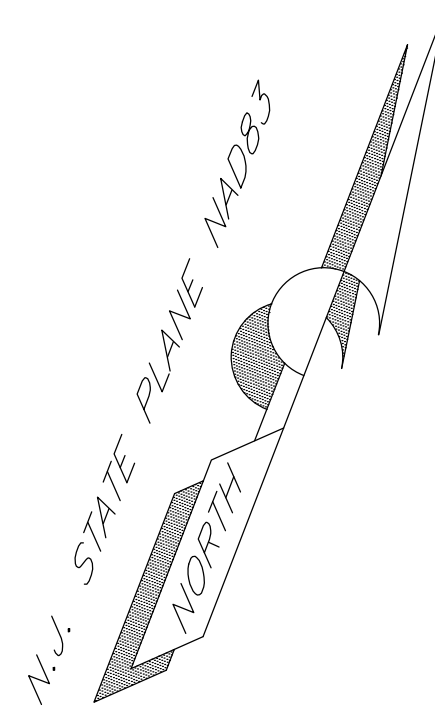
EXCAVATION AS-BUILT SURVEY  
WOODBIDGE POND  
WOODBIDGE, NEW JERSEY

<b>KSS</b> KENNON SURVEYING SERVICES INC.	
5 POWDER HORN DRIVE, SUITE 4 P.O. BOX 4477 WARREN, NEW JERSEY 07059	
CERTIFICATE OF AUTHORIZATION NO. 27944900	
PHONE: 732-564-1818	
EMAIL: KSS@KENNONSURVEYING.COM	
date	10/11/19
scale	1" = 30'
proj. no.	3008
sheet	1 OF 1

KENNY L. KENNON, P.L.S.  
NEW JERSEY PROFESSIONAL LAND SURVEYOR LICENSE NO. 37795

*Kenny L. Kennon*  
DATE: 10/11/19





VICINITY MAP  
(NOT TO SCALE)

NOTES

- BOUNDARY INFORMATION SHOWN HEREON FROM PLANS ENTITLED "WOODBIDGE POND REMEDIATION CONSTRUCTION" HATCO CORPORATION SITE, WOODBRIDGE TOWNSHIP, NEW JERSEY, OCTOBER 2018, PREPARED BY WESTON SOLUTIONS.
- TOPOGRAPHIC INFORMATION SHOWN HERE ON FIRM ACTUAL FIELD LOCATIONS PERFORMED BY THIS FIRM THROUGH 09/23/19 AND CONTRACTOR'S NOTES.
- NEW JERSEY STATE PLANE COORDINATES (NAD83 - HORIZONTAL, AND NAVD88-2011) ESTABLISHED FROM RTK GPS OBSERVATIONS.
- VEGETATIVE COVER MATERIALS WERE MANUFACTURED BY EXCAVATING MATERIALS & EQUIPMENT, INC. USING EQUAL VOLUMES CLEAN SAND BACKFILL AND SUPER-FINE PEAT MOSS TO CREATE A PRODUCT THAT WAS IDENTIFIED TO CONTAIN 13.7% ORGANICS USING METHOD ASTM D2974
- THE GRASSY MEDIAN ALONG MAC LANE WAS NOT PART OF THE AREA OF DISTURBANCE OR WETLAND DISRUPTION. AREA WAS SCARIFIED AND RESEDED AS PART OF FINAL SITE RESTORATION.

Plant Common Name	Plant Latin Name	Size	Spacing	Planting Bed	Cty.	Unit	Total Weight
Butterbush	Cephaelis occidentalis	1-2 gal	5' OC	Bed #2	200	EA	
Common Thinsquare	Schoenoplectus purgens	2" Plug	3' OC	Bed #2	200	EA	
Seed Mix A with Grain Rye Companion crop				Bed #2	7089	SF	8.12 lbs
Red Top	Quercus alba	7 gal	5' OC	Bed #3	20	EA	
Southern Arrowwood	Viburnum dentatum	1-2 gal	5' OC	Bed #3	20	EA	
Sweet Pepperbush	Clethra alnifolia	1-2 gal	5' OC	Bed #3	20	EA	
Seed Mix B with Grain Rye Companion crop				Bed #3	949	SF	1.53 lbs
**White Water Lily	**Nymphaea odorata	2" Plug	3' OC	Bed #4	352	EA	
Fescue/Bluegrass/Rye Seed Mix				Bed #4	4293	SF	
				Grassy Median	3052	SF	0.92 lbs

Replacement for \*\*Spatterdock - Nuphar lutea

Seed Mix A

Botanical Names	Common Names	Indicator	% By Weight
Sparganium angustifolium	Giant Bur Reed	OBL	17.00%
Poa palustris	Fowl Bluegrass	FACW	15.00%
Carex vulpinoidea	Fox Sedge	OBL	15.00%
Carex lurida	Lurid Sedge	OBL	15.00%
Sparganium americanum	Lantern Bur Reed	OBL	7.00%
Scirpus atrovirens	Green Bulrush	OBL	5.50%
Carex lupulina	Hop Sedge	OBL	5.00%
Juncus effusus	Soft Rush	FACW+	3.00%
Carex cincta	Fringed Sedge	OBL	3.00%
Carex cornosa	Beedy/Cosmos Sedge	OBL	3.00%
Aster paniculatus (Symphyctrichum paniculatus)	Swamp Aster	OBL	2.00%
Asclepias incarnata	Swamp Milkweed	OBL	2.00%
Eupatorium perfoliatum	Boneset	FACW	2.00%
Spionocarpus tabernaemontani	Soft Stem Bulrush	OBL	2.00%
Verbena hastata	Blue Vervain	FACW	1.00%
Scirpus cyperinus	Wool Grass	FACW	1.00%
Solidago patula	Rough Leaved Goldenrod	OBL	1.00%
Lobelia spicata	Great Blue Lobelia	FACW+	0.50%
			100.00%

Seed Mix B

Botanical Names	Common Names	Indicator	% By Weight
Sorghastrum nutans	Indian Grass	OBL	25.00%
Schizanthus scoparium	Little Bluestem	FACW	25.00%
Elymus virginicus	Virginia Wild Rye	FACW	20.00%
Tripsacum daniellii	Purple Top	FAC	11.00%
Andropogon gerardii	Big Bluestem	FAC	10.00%
Panicum virgatum	Switch Grass	FAC	5.00%
Panicum clandestinum (Dactyloctenium)	Deer Tongue	FAC+	4.00%
			100.00%

Grassy Median Seed Mix - Northeast Blend

Botanical Names	Common Names	% By Weight
Sporobolus perennans	Perennial Ryegrass	80.00%
Lolium perenne	Lolium Perennial Ryegrass	30.00%
Molinia caerulea	Midnight Kentucky Bluegrass	15.00%
Cynodon dactylon	Cynodon Red Fescue	10.00%
Stylosanthes trifoliate	Stylosanthes Chewing Fescue	15.00%
		100.00%

- BED 2 - 7089 FT<sup>2</sup>
- BED 3 - 949 FT<sup>2</sup>
- BED 4 - 4293 FT<sup>2</sup>
- CHANNEL - 5489 FT<sup>2</sup>
- GRASSY MEDIAN ALONG MAC LANE - 3052 FT<sup>2</sup>
- SHORELINE STABILIZATION (APPROXIMATE)
- SUBSURFACE I-8 SAND BACKFILL AREA (APPROXIMATE)

RESTORATION AS-BUILT SURVEY  
WOODBIDGE POND  
WOODBIDGE, NEW JERSEY

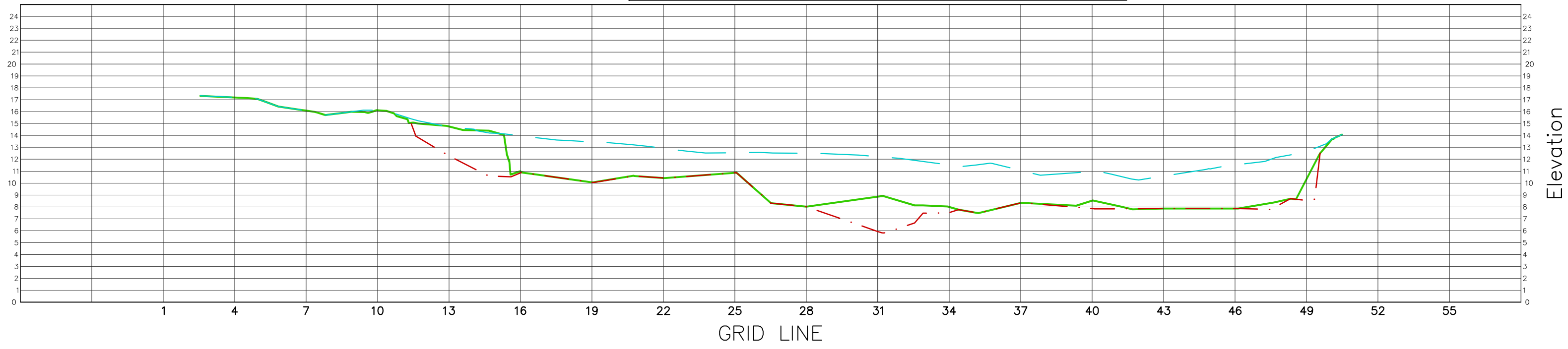
**KSS** KENNON SURVEYING SERVICES INC.  
5 POWDER HORN DRIVE, SUITE 4  
P.O. BOX 4477  
WARREN, NEW JERSEY 07059  
CERTIFICATE OF AUTHORIZATION NO. 27944900  
PHONE: 732-564-1818  
EMAIL: KSS@KENNONSURVEYING.COM  
DATE: 10/02/19  
SCALE: 1" = 30'  
SHEET: 3008  
OF: 1 OF 2

KENNY L. KENNON, P.L.S.  
NEW JERSEY PROFESSIONAL LAND SURVEYOR LICENSE NO. 37195

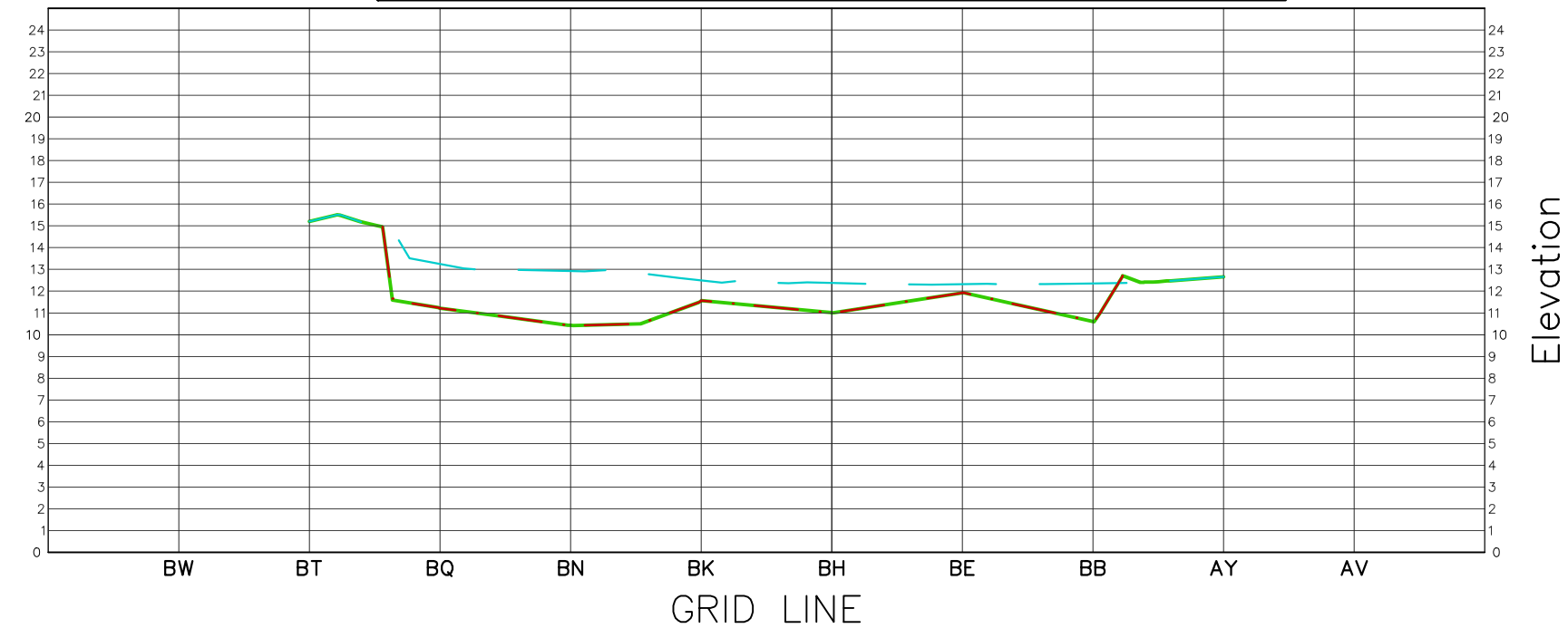
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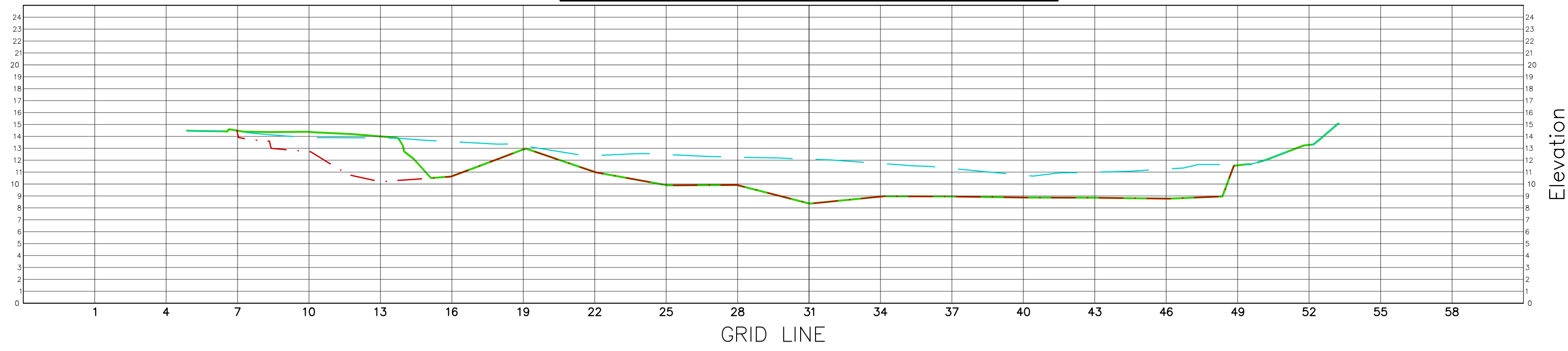
CROSS SECTION – GRID LINE BH



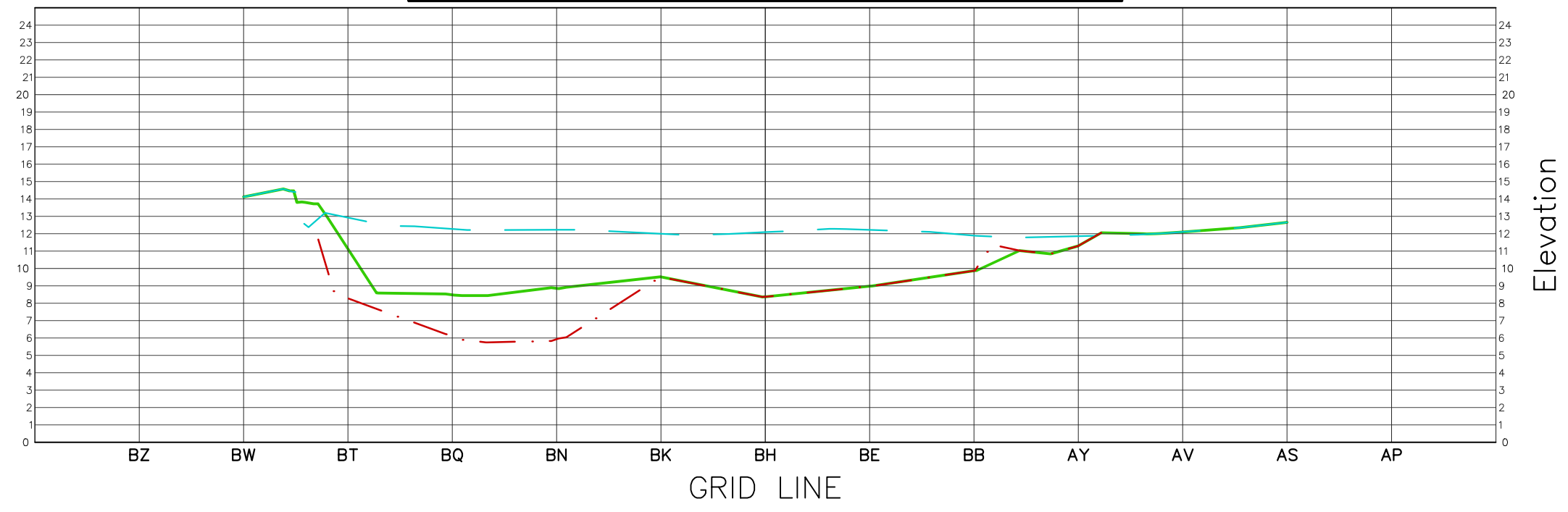
CROSS SECTION – GRID LINE 22



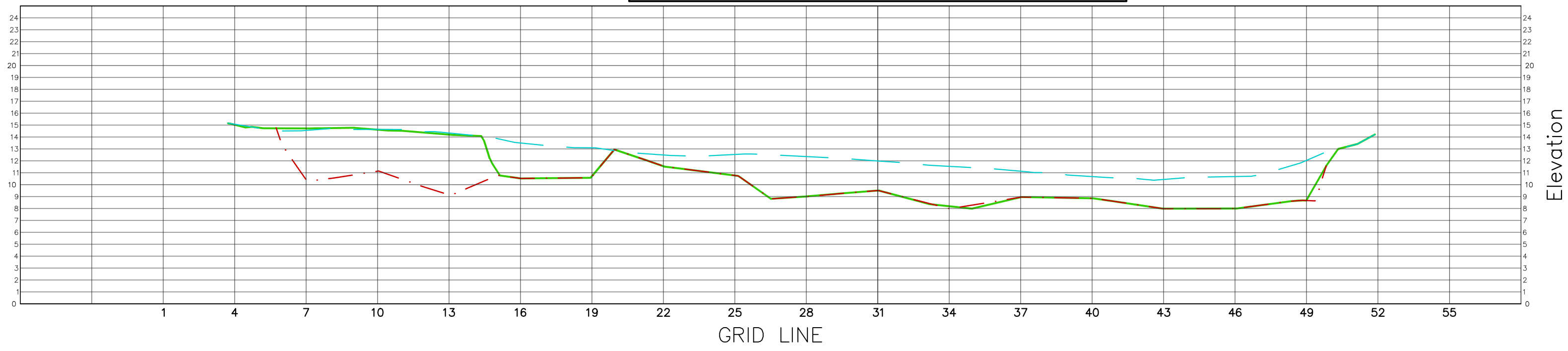
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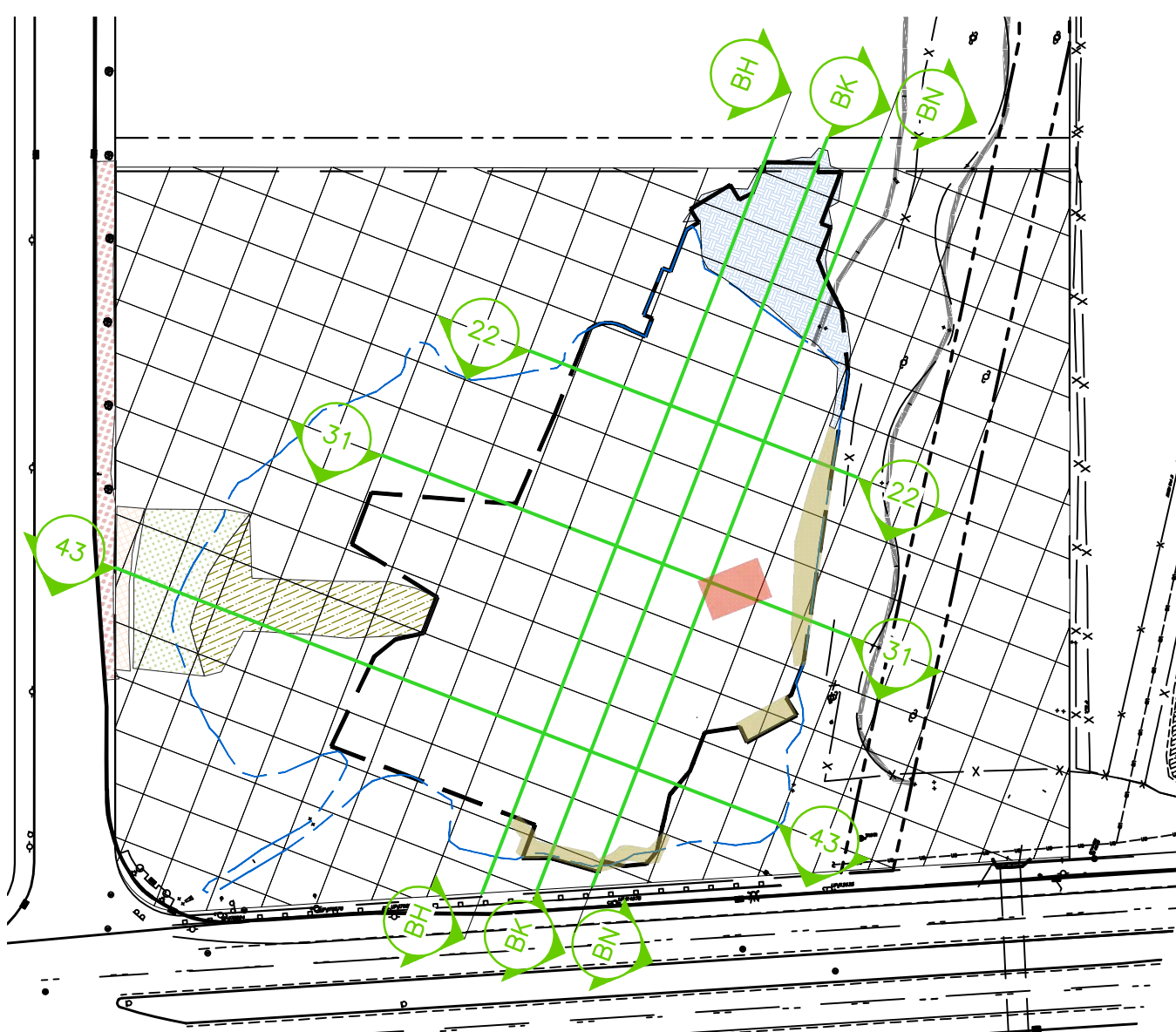
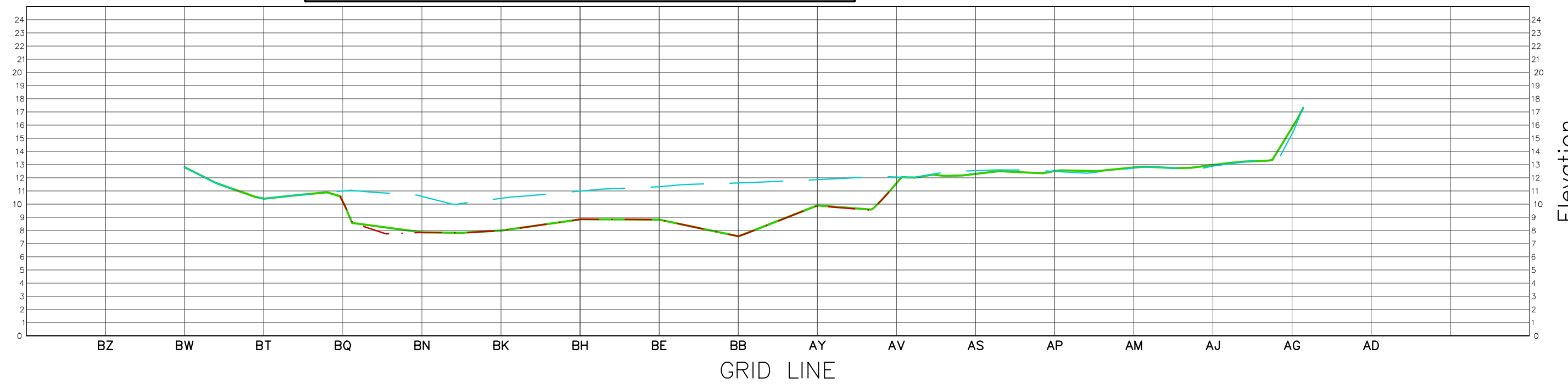
CROSS SECTION – GRID LINE 31



CROSS SECTION – GRID LINE BK



CROSS SECTION – GRID LINE 43



--- PRE-CONSTRUCTION  
 --- EXCAVATION  
 --- RESTORATION

HORIZONTAL SCALE: 1" = 40'  
 VERTICAL SCALE: 1" = 8'

NOTES

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RESTORATION AS-BUILT SURVEY  
 WOODBIDGE POND  
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**KSS** KENNON SURVEYING SERVICES INC.  
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 date 10/11/19 scale AS SHOWN proj. no. 3008 sheet 2 OF 2

KENNY J. KENNON, P.L.S.  
 NEW JERSEY PROFESSIONAL LAND SURVEYOR LICENSE NO. 37795

DATE: 10/11/19



**Appendix Q**  
**Construction Photographs**



## Appendix Q. Woodbridge Pond Remediation Construction Photographs



Aerial view of Woodbridge Pond remediation



March 12, 2019. Pond bottom sampling for waste characterization



## Appendix Q. Woodbridge Pond Remediation Construction Photographs



March 19, 2019. Perimeter air monitoring station during baseline sampling.



March 26, 2019. Placement of protective liner and stone at curb line for access to temporary staging and processing area



## Appendix Q. Woodbridge Pond Remediation Construction Photographs



March 26, 2019. Deployment of turbidity curtain for construction of temporary staging and processing area.



March 29, 2019. Placement of clean fill base for temporary staging and processing area



## Appendix Q. Woodbridge Pond Remediation Construction Photographs



April 1, 2019. Installation of sheet piling bulkhead for temporary staging and processing area



April 4, 2019. Placement of geotextile and protective liner in staging and processing area



## Appendix Q. Woodbridge Pond Remediation Construction Photographs



April 5, 2019. Placement of sacrificial fill material for working surface in staging and processing area.



April 8, 2019. Placement of steel bins to be used for sediment stabilization.



Appendix Q. Woodbridge Pond Remediation Construction Photographs



April 22, 2019. Excavation of access channel adjacent to temporary staging and processing area bulkhead.



April 23, 2019. Dredging access channel.



Appendix Q. Woodbridge Pond Remediation Construction Photographs



April 23, 2019. Stabilization of dredged sediments in steel hopper by mixing with Portland cement



April 26, 2019. Load out of stabilized sediment for offsite disposal.



Appendix Q. Woodbridge Pond Remediation Construction Photographs



April 29, 2019. Drip pan at bulkhead offloading area.



April 29, 2019. Sediment stabilization in steel hoppers



Appendix Q. Woodbridge Pond Remediation Construction Photographs



April 30, 2019. Dredging and survey activities.



May 7, 2019. Dredging operations: Push-boat locating scow to be filled by dredge.



Appendix Q. Woodbridge Pond Remediation Construction Photographs



May 7, 2019. Collecting post-excavation verification samples.



May 8, 2019. Temporary weir and sedimentation controls installed at pond outfall



Appendix Q. Woodbridge Pond Remediation Construction Photographs



May 10, 2019. Surveying post-excavation bottom elevation



May 21, 2019. Initial clearing of vegetation from planned wetland enhancement area



Appendix Q. Woodbridge Pond Remediation Construction Photographs



May 23, 2019. Open water in footprint of planned wetland enhancement area.



May 24, 2019. Sediment sample processing and collection.



Appendix Q. Woodbridge Pond Remediation Construction Photographs



June 19, 2019. Dredging within planned wetland enhancement area.



July 16, 2019. Aerial view of temporary staging and processing area operations



Appendix Q. Woodbridge Pond Remediation Construction Photographs



July 25, 2019. Dredging of wetland area north of planned wetland enhancement area



July 25, 2019. Northern extent of wetland dredging



Appendix Q. Woodbridge Pond Remediation Construction Photographs



August 5, 2019. Wetland backfilling



August 22, 2019. Restoration of wetland north of pond



Appendix Q. Woodbridge Pond Remediation Construction Photographs



August 27, 2019. Removal of sand fill and timber mats from above protective liner in temporary processing and staging area



August 28, 2019. Removal of protective liner from temporary processing and staging area



## Appendix Q. Woodbridge Pond Remediation Construction Photographs



August 29, 2019. Wetland restoration area north of pond.



August 30, 2019. Removal of sheet piling from temporary staging and processing area



Appendix Q. Woodbridge Pond Remediation Construction Photographs



September 5, 2019. Placement of clean backfill in deep dredge areas



September 6, 2019. Removal of clean sand from temporary staging and processing area for placement in deep dredge areas.



Appendix Q. Woodbridge Pond Remediation Construction Photographs



September 9, 2019. Final survey of pond bottom



September 10, 2019. Equipment demobilization



## Appendix Q. Woodbridge Pond Remediation Construction Photographs



September 12, 2019. Installation of coir logs at base of wetland restoration along Mac Lane



September 13, 2019. Placement of topsoil in wetland restoration area along Mac Lane



## Appendix Q. Woodbridge Pond Remediation Construction Photographs



September 16, 2019. Installation of plantings in wetland restoration area along Mac Lane



September 19, 2019. Final inspection of Mac Lane area restoration and curb line



Appendix Q. Woodbridge Pond Remediation Construction Photographs



September 21, 2019. Installation of plantings in northern wetland restoration area